AMT Datasouth

Fastmark 4000 Series
Barcode Label Printer

User's Guide



Part No. 110121 A

IMPORTANT SAFETY INSTRUCTIONS AND OTHER NOTICES

- This label printer complies with the requirements in Part 15 of FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interface to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.
- Place the printer on a flat, firm and solid surface.
- Do not place the printer near a heat source or near water.
- Refer to the specification label on the bottom of this printer and ensure that your power source exactly meets these requirements.
- Do not open the printer during operation to avoid electrical shock.
- Do not attempt to disassemble this printer if it malfunctions.
-
- The material in this document is provided for general information and is subject to change without notice.

TRADEMARK CREDITS

PCL is a registered trademark of Hewlett-Packard Company

Windows, MS-Word and MS-DOS are registered trademarks of Microsoft Corporation

PC is a registered trademark of International Business Machines

Centronics is a registered trademark of Centronics Corporation

CodeSoft is a registered trademark of Techniques Avancees

BarTender is a registered trademark of Seagull Scientific Systems, Inc.

LabelView is a registered trademark of Techniques Avancees

LabelMatrix is a registered trademark of StrandWare, Inc

CONVENTIONS

Some of the procedures in this guide contain special notices that highlight important information:

Note	Indicate information that you should know to help your printer run properly and efficiently.
Caution	Indicate guidelines that, if not followed, can cause damage to equipment.
Warning	Indicate a situation where there may be a danger to you.
Important	Indicate that the associated material needs to be done to ensure proper printer operation.

The use of the term's *right* and *left* assume that you are looking at the front of the printer.

TECHNICAL SUPPORT

Please contact your local dealer first for technical support. Your dealer is knowledgeable about driver installation, application software and general printer operation. If you still need factory technical support after contacting your dealer, you may mail any problems through the E-mail account, "www.amtdatasouth.com". You can also get the most updated driver or application from the web site "http://www.amtdatasouth.com".

First Edition: April 2001

Table of Contents

Table of Figures

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PRODUCT DESCRIPTION

This label printer is a high-performance, low-cost Direct Thermal/Thermal Transfer labeling system. Its user-friendly design and affordable price set a new standard for the Desktop Label Printer in retail, office and industrial applications.

The printer is designed with the most efficient memory management technology - *True Speed* and prints at a speed of 1 to 6 inches per second. When bundled with its smart printer driver, the user can easily print out bar codes, texts and graphics from any editing application (e.g. CodeSoft, BarTender) under Windows 95/98/2000, and NT. All popular bar codes and fonts are resident in the printer memory to handle versatile applications.

The solid designed mechanism allows quick and easy media (paper) and ribbon loading. The optional Peel and Present with Internal Rewind and Cutter provide alternatives of fan-fold label and continuous paper handling.

This printer is a compact, highly integrated, high performance and high resolution on-site labeling system.

The User’s Manual will help you understand basic operations of the printer such as set-up, installation, configuration and maintenance. Before reading the manual you should first identify your printer model. The printer model name is located on the back of the printer on its product label.

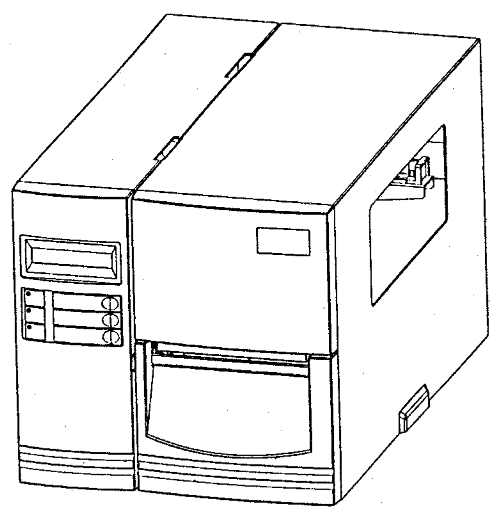


Figure 1 - Fastmark 4000 Series Printer

OVERVIEW

The Fastmark FM4000 series is currently comprised of 3 models:

- FM4402
- FM4602
- FM4603

While these models are similar in many ways, important differences exist. Throughout this manual instructions and illustrations applying to a particular model will be labeled accordingly otherwise the instructions apply to all models.

> **NOTE:** The model number is printed on the compliance label attached to the back of the printer. After un-packing please record the model number below for reference.

MODEL No: ________________

SERIAL No:________________

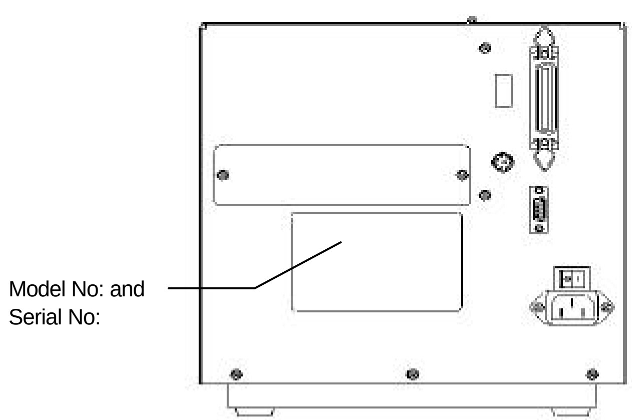


Figure 2 - Model and Serial Number Location

UNPACKING AND INSPECTION

This section is provided to assist you in taking the printer from the shipping container to the application environment and ready for use.

1. Remove top foam packing piece.
2. Lift printer straight up out of box carefully with adequate assistance.
3. Remove accessory kit and supplies.
4. Remove printer from plastic bag.

NOTE: Save box and all packing materials for future use, in the event the printer needs to be shipped.

Verify that the printer box contains the following materials when unpacking:

a. Printer
b. User's Manual
c. Power cord
d. Diskette(s) or CD for Windows 95/98/2000/NT and Label Design Software
e. Take up Core
f. A ribbon roll and a take-up ribbon core.
g. A media roll (not pictured)

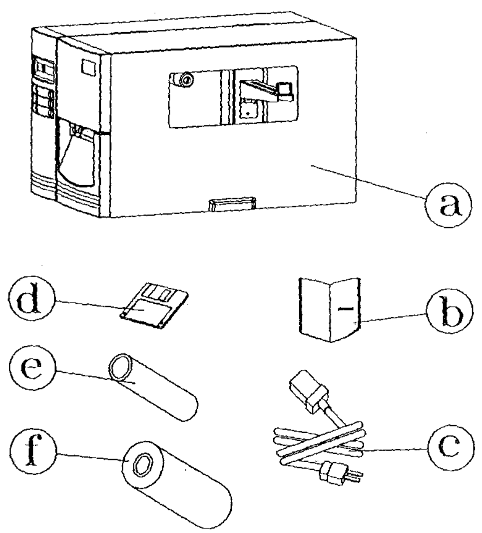


Figure 3 - Shipped with Printer

INSTALLATION AND CONFIGURATION

Setting up the Printer

Before setting up the printer you should first consider the following:

- Flat stable surface with sufficient clearance to allow for interface cables and media loading.
- Free from excessive direct sunlight, temperature, humidity, dust, dirt, and debris.
- Near a grounded AC power receptacle wired in compliance with local ordinances.

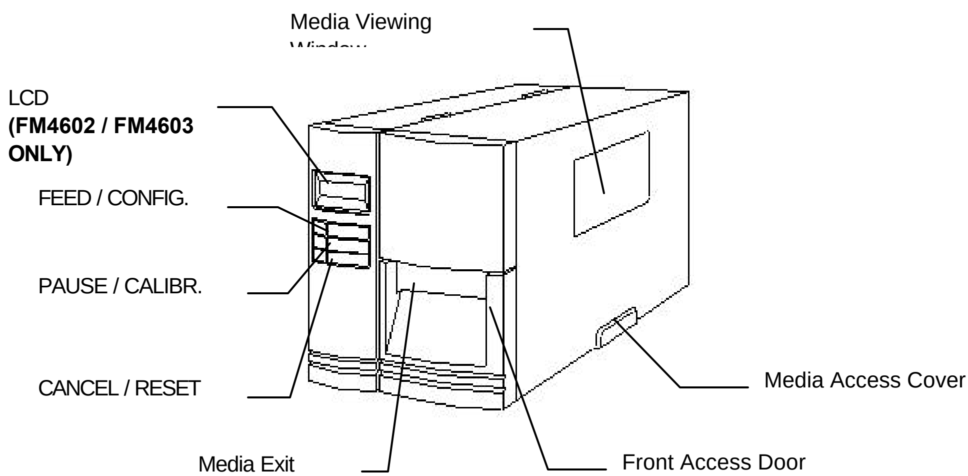


Figure 4 - Front and Side View

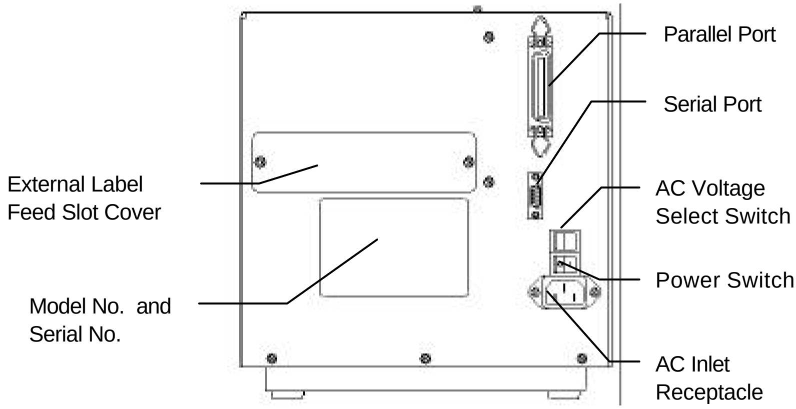


Figure 5 - FM 4402 Back Panel

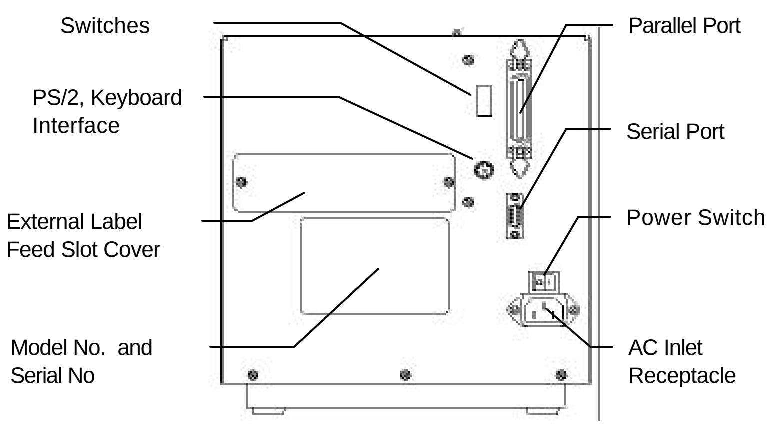


Figure 6 - FM 4602 and 4603 Back Panel

Connecting the Power Cord

1. Ensure printer **Power Switch** is off "0".

2. **IMPORTANT: (FM4402 ONLY)** Ensure the **AC Voltage Select Switch** is set to the correct Voltage for this installation.

3. Remove the yellow voltage setting label from the **AC Inlet Receptacle**.

4. Connect the power cord to the **AC Inlet Receptacle** located on the back of the printer.

5. Connect AC power plug to a suitable AC source.

6. Connect either Centronics Parallel cable or RS-232 Cable.

    CAUTION (FM4402 ONLY): Failure to properly set the AC Voltage Select Switch will cause damage to the printer and will Void the warranty. Ensure this is set properly before connecting the AC power cord.

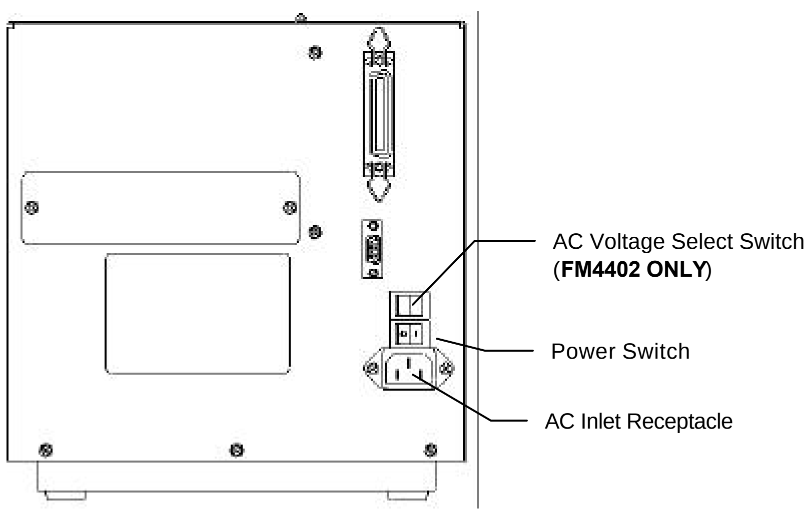


Figure 7 - Power Cord Connection

Connecting the Printer to Your Host

1. You can connect the printer with any standard Centronics cable to the parallel port of the host computer.

2. Or, you can connect the printer with a serial cable to the RS-232C port of your computer or terminal. (For PC compatibles, the RS-232C port is COM1, COM2 or COM3.)

   Note: Using Centronics allows for a much higher communication speed than serial.

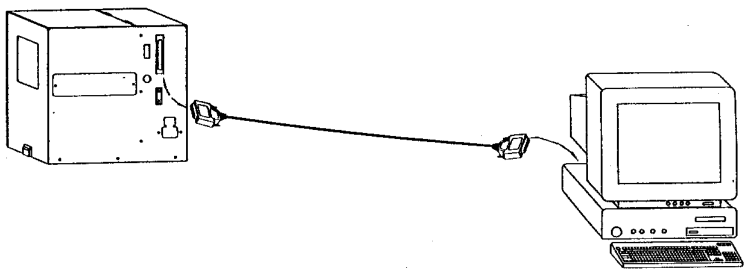


Figure 8 - Communication Cable

3. If you use the serial port with your own cable, refer to the **Appendix A** and check the pin connection. Be sure that the speed (baud rate) and protocol are the same between printer and host.

   Caution: Pin 9 on the serial port is directly connected to +5volts DC. It is suggested that this pin be not connected in your cable, unless required.

   To change the Baud Rate:

   FM4402: Send the <STX>KI8*n* command to the printer. See the **System Setting Commands** section for more details.

   FM4602/4603: The switches on the back control Baud Rate. See the **Back Panel Switches** section for more details

The factory default parameters of serial port are:

Speed (baud rate)	9600
Data format	1 start bit, 8 data bits and1 stop bit.
Parity	None
Handshaking (Flow control)	XON/XOFF as well as RTS/CTS

Note: It is not necessary to set a switch or send a command for the parallel and serial port selection. The printer automatically detects the active port.

Print a SELF-TEST to review serial settings.

Loading the Ribbon

Thermal Transfer Media only

If Direct Thermal Media is used, skip to the section Loading Media.

1. Open the **Media Access Cover** by lifting it up until it rests upon the top of the printer.

2. Open the **Front Access Door** by rotating it down.

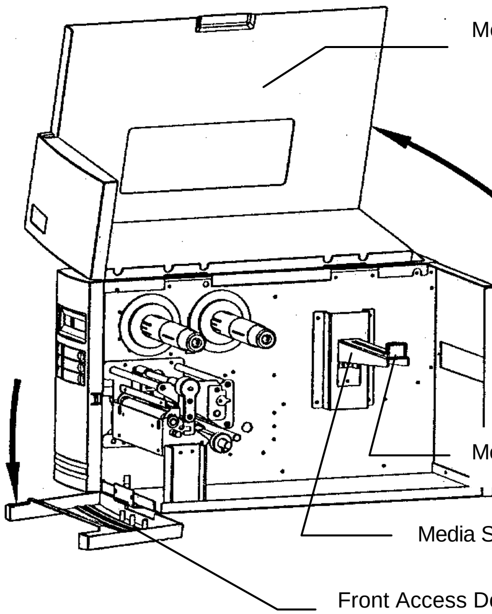
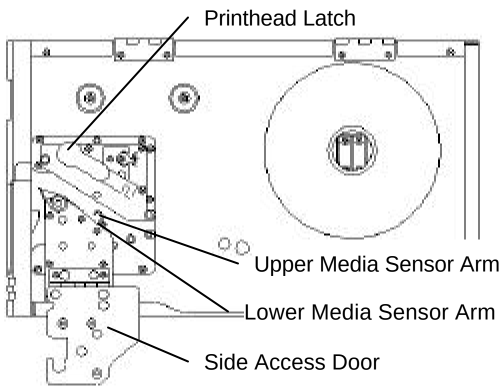


Figure 9 - Open Media Access Cover

3. Rotate the Green **Printhead latch** counter-clockwise to open the printhead module.

4. Rotate the **Side Access Door** down to allow the ribbon to be loaded under the printhead module. This will allow you to slide the ribbon under the printhead without having to



thread it under the module.

Figure 10 - Printhead Latch and Side Access Cover

5. Unwrap the ribbon and place the **Ribbon Supply Roll** on the **Ribbon Supply Spindle** located towards back of printer.

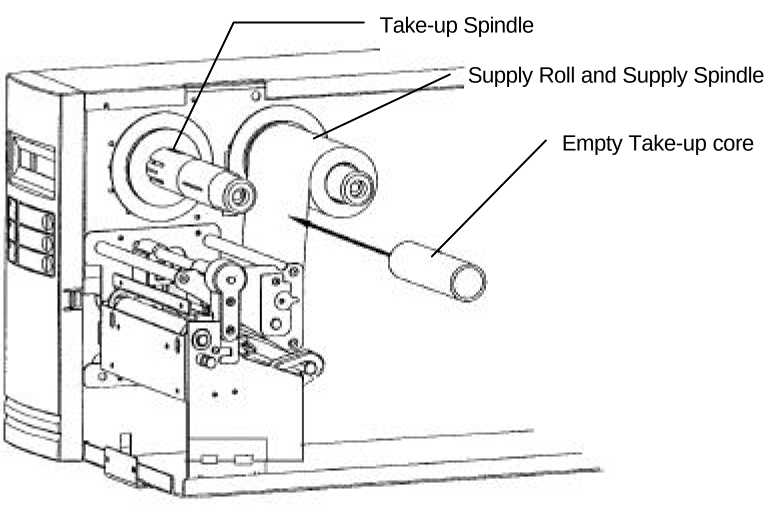


Figure 11 - Ribbon Take-Up Core

6. Place the **Ribbon Take-up** core on the **Ribbon Take-Up Spindle** located towards the front of the printer.

7. Slide both cores completely towards the center of the printer.

8. Route the ribbon under the print mechanism.

9. **Important:** Route **ribbon under and around back** of **Ribbon Take-Up** Core before attaching using tape or adhesive leader.

10. Tighten ribbon by manually rotating the Take-up Core counter-clockwise.

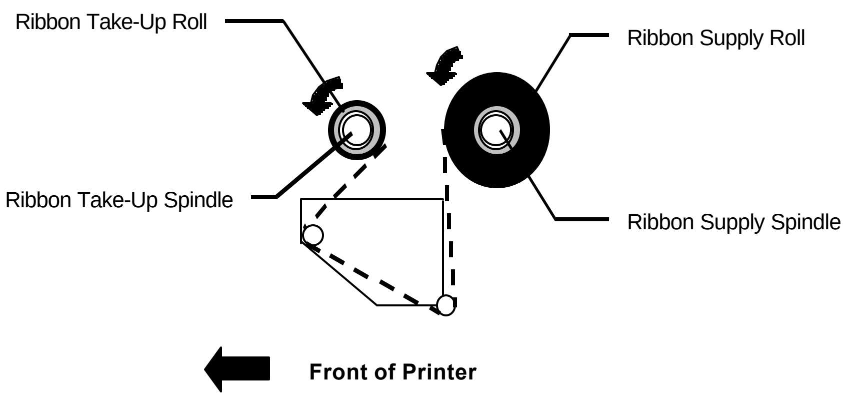


Figure 12 - Ribbon Routing

11. **Important:** To ensure proper ribbon operation complete the following checklist:

- ❑ Ribbon is wound ink in and feeding off the top of the **Ribbon Supply Roll**.
- ❑ Ribbon is re-wound on **Take Up Roll** from the bottom.
- ❑ Ribbon is routed above the **Upper Media Sensor Arm**. Only the media should be below this arm.
- ❑ When properly loaded both the **Ribbon Supply** and **Ribbon Take-Up Rolls** will be rotating **counterclockwise** as shown on the **Ribbon Routing** picture.

12. Verify if the printer is set for Thermal Transfer Mode:

    a. To verify the FM4402 printer print a self-test. If the printer is not set for Thermal Transfer mode, it can be set by using the Windows drivers, Utility Software, or sending the appropriate printer commands via the host.

    b. To verify the FM4602 and FM4603 printers are set to Thermal Transfer mode, switch 1 (on the back of the printer) is set to the off position.

Loading Media

1. Fully open **Media Access Cover**.

2. Open the **Front Access Door** by rotating down.

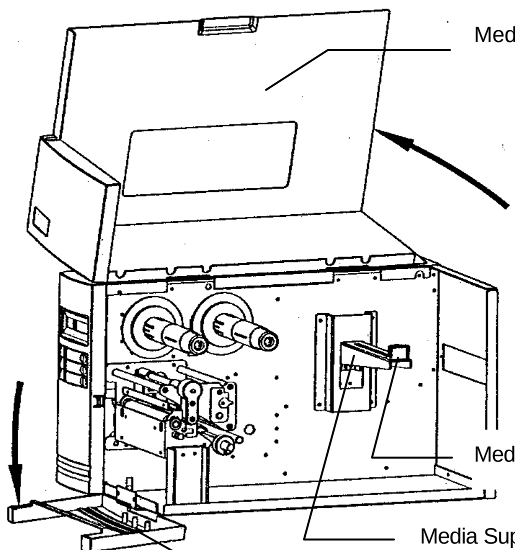


Figure 13 - Open Media Access Cover

3. Rotate the green **Printhead Latch** counterclockwise to open the printhead.
4. Rotate the **Side Access Door** down to allow the media to be loaded under the printhead module.

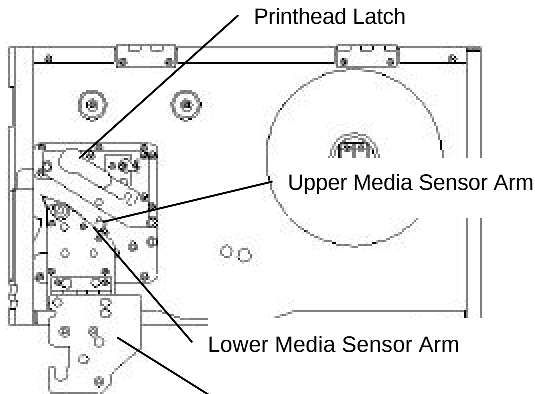


Figure 14 - Printhead Latch and Side Access Cover

5. Slide the **Media Supply Guide** to the full widest position.
6. Ensure the media is face out with the labels feeding from the top of the roll. If not obtain correctly wound media from your supplier
7. Place the media roll on the **Media Supply Spindle.**
8. Slide the roll fully towards the center of the printer.
9. Slide the **Media Supply Guide** towards the center of the printer until it is snug against the media.

10. Slide the green **Outside Media Guide** off the **Front** and **Back Media Rails** by pulling straight out.

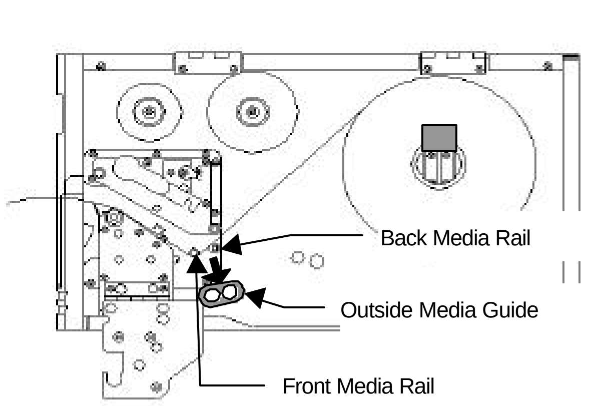


Figure 15 - Outside Media Guide

11. Thread the media over the **Back Media Rail** and under the **Front Media Rail**.
12. Continue feeding the media through the black **Upper** and **Lower Media Sensor Arms** located under the print module.
13. Place the green **Outside Media Guide** (smooth side in) back onto the **Front** and **Back Media Rails**.
14. Slide the **Outside Media Guide** towards the center of the printer until it just touches but does not buckle the media.

15. Grasping the Sensor Adjust Knob and sliding in or out as needed can move the Media Sensor. This is required only if the sensor must be moved to a specific location on the label to detect a notch (hole) or gap.

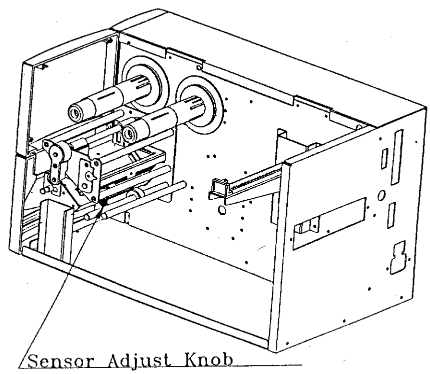


Figure 16 - Media Sensor Adjust Knob

16. **Important:** To ensure proper media feeding and sensor operation, complete the following checklist:

- ❑ Media is wound Face Out (print side out) and feeding off the top of the roll.
- ❑ Media is routed exactly as shown over the **Back Media Rail** and under **the Front Media Rail**.
- ❑ Media is routed between the **Upper** and **Lower Media Sensor Arms** located under print module.
- ❑ The **green Outside Media Guide** has been re-installed.
- ❑ If required, the media sensor is adjusted directly over the notch (hole) or gap.

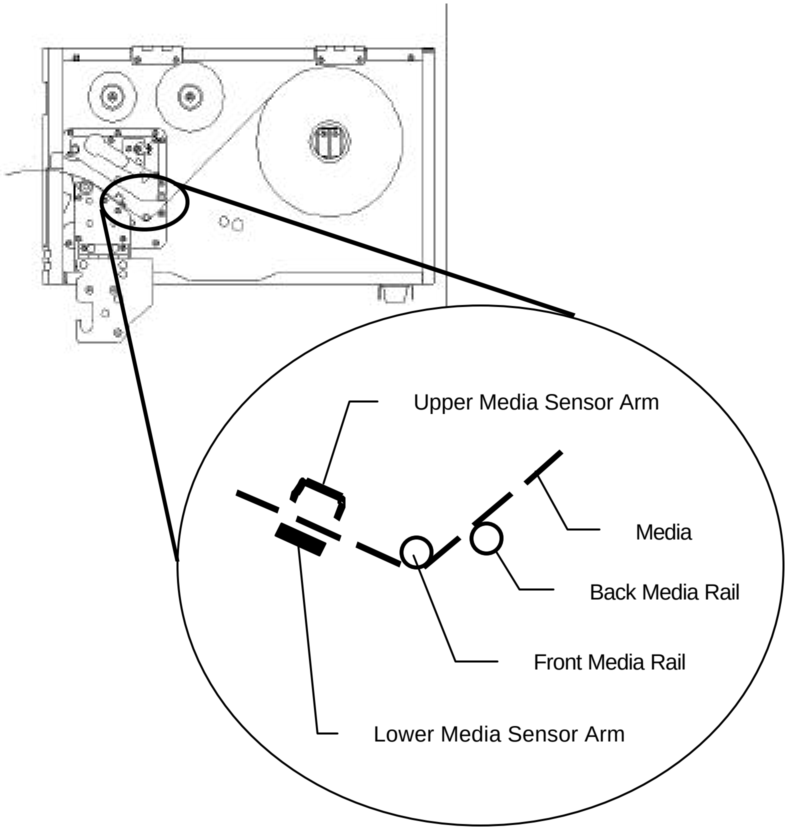


Figure 17 - Media Routing

17. Rotate the **Side** Access **Door** up to close.
18. Rotate the green **Print Head Latch** clockwise fully to lock the printhead and **Side Access Door** shut.

Changing Position of the Media Supply Spindle

The printer can store under the Media Access Cover an 8-inch outer diameter media roll that is wound on either 1.5 inch or 3 inch inner cores. When the Media Access Cover is closed touching on either the Media Cover or the bottom of the printer could cause unnecessary drag on the form. The printer's **Media Supply Spindle** can be moved to accommodate these issues.

To change the position of the Media Spindle:

1. Turn off the printer.
2. Remove the media from the Media Spindle.
3. Using a Phillips Screwdriver remove the 4 screws holding the Media Spindle to the center of the printer.
4. Slide the Media Spindle to the appropriate position.

   1.5 inch inner core: Media Spindle needs to be in the Lower position.

   3-inch inner core: Media Spindle needs to be in the Upper Position.

5. Using a Phillips Screwdriver, install the 4 removed screws.
6. Reload the Media into the printer.

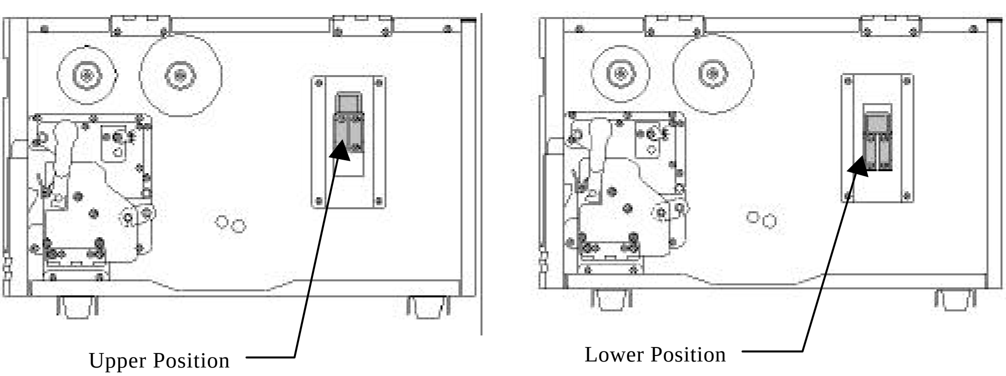


Figure 18 - Media Spindle Location

Calibrating Media Sensors

Important: The first time media is installed, the Media Sensors must be calibrated. After the first calibration no further calibration is required unless the media type (length, color, backing material, etc.) is changed or irregular feeding occurs.

1. Ensure the printer is powered off.
2. Verify that the media is properly loaded and routed as detailed in Loading Media Section.
3. While pressing **and holding** the **PAUSE/CALIBR.** button, power on the printer.
4. Release the **PAUSE/CALIBR.** button when:
    a. FM4402: The printer begins feeding labels.
    b. FM4602 and FM4603: The message "CALIBRATION …" is displayed on the LCD.
5. Approximately 12 inches of media will be fed.
6. When feeding stops and the READY and MEDIA indicators stop blinking and remain illuminated, the printer has completed the Label Sensor Calibration procedure.

    On the models with a LCD, the printer will display 'READY'.
7. When the printer completes the Label Sensor Calibration procedure it will save the related parameters (reflection characteristics, label length, etc.) to EEPROM.

Caution: Running labels that are less than 1.5 inches in length without the correct calibration can result in loss of gap detection.

Performing the Self Test

1. Power off the printer.
2. Make sure that 4 inch wide media is installed. The Self-test will print the maximum width of the installed label.
3. Press and hold the **FEED/Config** button.
4. Power on the printer.
5. Release the **FEED/Config** button when:
    a. FM 4402: The printer begins feeding labels.
    b. FM 4602 and FM 4603: The message “SELF TESTING…” is displayed on the LCD.
6. The following the occur depending upon the emulation installed into the printer:

    PPLA emulation: The printer will print a configuration page then feed to the first print position on the next label.

    PPLB emulation: The printer will print a configuration page, feeds one line and then enter into its Hexadecimal print mode. To exit the Hexadecimal mode press the **CANCEL/Reset** button then press the **FEED/Config** button to go to the first print position on the next label.

7. The following information will be printed on this report.
    - Font list
    - DIP switch settings (FM4602 and FM4603 only)
    - Hardware configuration and status
    - Label parameters
    - Firmware version

Note: The following figures are examples of self-tests run on FM4402, and FM4602/4603 with both PPLA and PPLB emulation's installed. The feature setting on your printer may be different depending upon options selected.

Note: Print samples printed on the FM4602 and FM4603 are similar.

Self Test Pattern for FM4602/FM4603 PPLA

Label Printer with Firmware PPLA X2A0-1.38 100199
STANDARD RAM: 2097152 BYTES
AVAILABLE RAM: 1947904 BYTES USASCII
LABEL COUNT: 509 57 M
FLASH MEMORY: NONE
CHECKSUM: 0000
LAB LEN(TOP TO TOP): 18 mm. 145 13
MEDIA SENSOR LEVEL: 2

DIP SWITCH CONFIGURATION:

BIT	ON...OFF	DESCRIPTION
1	X (OFF)	DIRECT THERMAL
2	X (OFF)	STANDARD CTRL CODES
3	X (ON)	CUTTER INSTALLED
4	X (OFF)	WITH NORMAL GAP OR CONT.
5	X (OFF)	WITHOUT PEELER
6	X (OFF)	9600: N, 8, 1P
7	X (OFF)	
8	X (OFF)	

This is internal font 0. 0123456789 ABCabcXyz
This is internal font 1. 0123456789 ABCabcXyz
This is internal font 2. 0123456789 ABCabcXyz
THIS IS INTERNAL FONT 3. 0123456789 ABCABC
THIS IS INTERNAL FONT 4. 012345678
THIS IS INTERNAL FONT 5. 012345678
THIS IS INTRNL FONT 6
This is internal font 7. OCR-A ABCabc
0123456789

ASD Smooth font (6 points) - 0123456789 ABCabcXyz
ASD Smooth font (8 points) - 0123456789 ABCabcXyz
ASD Smooth font (10 points) - 0123456789 ABCabcXyz
ASD Smooth font (12 points) - 0123456789 ABCab
ASD Smooth font (14 points) - 0123456789
ASD Smooth font (18 points) - 012

Courier Fonts:
R8/E94/PC/PCA/PCB/LG/GK/RUS

Figure 19 - Self Test FM4602/FM4603 PPLA

Self Test Pattern for FM4602/FM4603 PPLB

Label Printer with Firmware PPLB X2B0-1.39 100399
STANDARD RAM: 2097152 BYTES   8 bit data:
AVAILABLE RAM: 1936896 BYTES Code Page 437
LABEL COUNT: 510   57 M
FLASH MEMORY: NONE
H. POSITION ADJUST.: 0000
CHECKSUM: 0000
LAB LEN(TOP TO TOP): 18 mm. 145 13
MEDIA SENSOR LEVEL: 2

DIP SWITCH CONFIGURATION:

BIT	ON..OFF	DESCRIPTION
1	X	DIRECT THERMAL
2	X	EURO MARK DISABLED
3	X	CUTTER INSTALLED
4	X	WITH NORMAL GAP OR CONT.
5	X	WITHOUT PEELER
6	X	
7	X	9600: N, 8, 1P
8	X	

This is internal font 1. 0123456789 ABCabcXyz

This is internal font 2. 0123456789 ABCabcXyz

This is internal font 3. 0123456789 ABCabcXyz

This is internal font 4. 0123456789 ABCXYZ

THIS IS INTERNAL FNT5

Figure 20 - Self Test FM6402/FM4603 PPLB

Self Test Pattern for FM4402 PPLA

CONFIGURATION

Label Printer with Firmware PPLA X1A0-1.00 110399
RS232 : 9600, 8 DATA BITS, NONE PARITY, 1 STOP BIT.
STANDARD RAM : 524288 BYTES USASCII
AVAILABLE RAM : 376448 BYTES
THERMAL TRANSFER
LABEL COUNT : 47 5 METERS
CHECKSUM : 0000
LAB LEN<TOP TO TOP>: 0 mm.
MEDIA SENSOR LEVEL : 3
REFLECTIVE SENSOR

This is internal font 0. 0123456789 ABCabcXyz
This is internal font 1. 0123456789 ABCabcXyz
This is internal font 2. 0123456789 ABCabcXyz
THIS IS INTERNAL FONT 3. 0123456789 ABCXYZ
THIS IS INTERNAL FONT 4. 0123456789
THIS IS INTERNAL FONT 5. 0123456789
THIS IS FONT 6.
This is internal font 7. OCR-A ABCabc
0123456789
ASD Smooth font (6 points) - 0123456789 ABCabcXyz
ASD Smooth font (8 points) - 0123456789 ABCabcXyz
ASD Smooth font (10 points) - 0123456789 ABCabcXyz
ASD Smooth font (12 points) - 0123456789 ABCabcX
ASD Smooth font (14 points) - 0123456789 AE
ASD Smooth font (18 points) - 0123
Courier Roman-8.!#$[]{|}~
Courier ECMA-94.!#$[]{|}˜ ¡¢
Courier PC-8.☻♥!#$[]{|}⌐≡±≥
Courier PC-8A.☻♥!#$[]{|}ã≡±≥
Courier PC-8B.☻♥!#$[]{|}®–±‗
Courier Legal.!#$[]§¶†™

Figure 21 - Self Test FM4402 PPLA

Self Test Pattern for FM4402 PPLB

CONFIGURATION

Label Printer with Firmware X1B0-1.00 110399
RS232: 8, N, 1P, 9600
STANDARD RAM : 524288 BYTES
AVAILABLE RAM: 382912 BYTES
THERMAL TRANSFER
LABEL COUNT : 17 2 METERS
CHECKSUM : 0000
LAB LEN<TOP TO TOP>: 0 mm.
MEDIA SENSOR LEVEL : 3
REFLECTIVE SENSOR

This is internal font 1. 0123456789 ABCabcXyz
This is internal font 2. 0123456789 ABCabcXyz
This is internal font 3. 0123456789 ABCabcXyz
This is internal font 4. 0123456789 ABCXYZ
THIS IS INTERNAL FONT 5

Figure 22 - Self Test FM4402 PPLB

Resetting the Printer to Factory Default Settings

To reset the printer to its factory defaults after certain commands have been sent or settings changed:

1. Power off the printer.
2. Press and hold the **CANCEL/RESET** button.
3. Power on the printer.
4. As the printer turns on the printer will:

   FM 4402: All the LED's will come on with the Ribbon LED will begin flashing.

   FM 4602/4603: The printer will display "**E2PROM RESET …**" on the LCD and the READY LED will blink.

5. When the "READY" LED stops blinking and is continually on the printer's initialization is completed. On the FM4602 and FM4603 models the Display will indicated "READY" on the LCD.
6. The following parameters reset to Factory Defaults.

   - Label parameters
   - Heat (Darkness)
   - Speed
   - Symbol set (language)
   - Others for specific emulation

Notes:

1. All settings stored in non-volatile E2PROM are not erased when the printer looses power.
2. Mechanical positions of the Switches on the back of FM 4602 and 4603 are not changed with this procedure.
3. It is necessary to do a Label Sensor Calibration following a Reset.
4. The label count printed during the Self-Test can not be reset.

This is a blank page

PANEL OPERATION

Front Panel

The front panel includes

- 3 LED indicators (READY, MEDIA and RIBBON)
- 3 buttons (FEED, PAUSE and CANCEL)
- LCD display (**for FM4602 and FM4603 models only**)

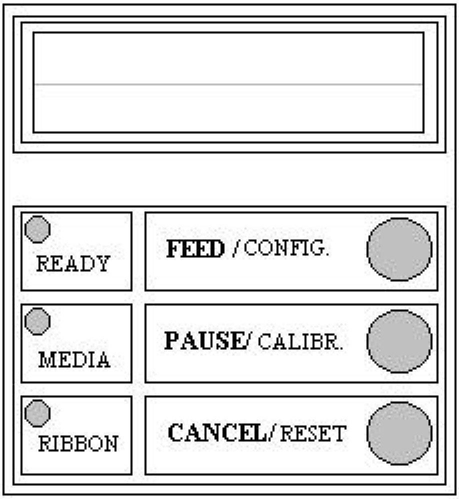


Figure 23 - Fastmark 4000 Series Front Panel

LED Indicators

There are three LED indicators on the front panel, “READY”, “MEDIA” and “RIBBON”. These indicators display the present status of the printer.

✷ READY The Ready LED indicates the following conditions:

ON	- The printer's powered is on.
Off	- The printer's power is off.
Blinking	- Error condition (see Troubleshooting section for details)

✷ MEDIA The Media LED indicates the following conditions:

ON	- Media is installed and ready for Normal operation.
Off	- The printer's power is off.
Blinking	- Media Out condition. *This condition only occurs following a media motion request.*

✷ RIBBON The Ribbon LED indicates the following conditions:

ON	- The printer is set for Thermal Transfer mode and the printer contains a Thermal Transfer Ribbon.
OFF	- The printer is set for Direct Thermal Mode.
Blinking	- The printer is set for Thermal Transfer mode and the ribbon is not moving or at end of life. *This condition only occurs following a media motion request.*

Buttons

Depending upon the printer model and current mode, the Front Panel buttons serve multiple functions. Refer to the following tables for their specific functions.

Pressed and held down during Power UP

Upon completion of the desired function the printer will go into a READY condition.

Button	***Function***
❍ FEED	The printer performs an internal Self-Test and prints a Configuration Report. *The FM4602/4603 models display "SELF TESTING" on the LCD display.*
❍ PAUSE	The printer will do a Label Sensor Calibration test on the current loaded media. *The FM4602/4603 models display "CALIBRATION" on the LCD display.*
❍ CANCEL	The printer will reset the Non-Volatile memory (E2PROM) back to factory defaults. *The FM4602/4603 models display "E2PROM RESET" on the LCD display.*

Pressed during normal operation

Button	Function
❍ FEED	The printer will Feed a one label.
❍ PAUSE	The printer will begin blinking the READY LED. If printing the printer will STOP printing, and the READY LED will blink. If pressed a second time the printer will resume normal operation. *The FM4602/4603 models will blink the READY LED and display PAUSE on the LCD display while in the Paused condition.*
❍ CANCEL	The printer will Stop printing and delete any further information in the printer's buffer. The user must realign the media by pressing the FEED button, following this function. *The FM4602/4603 models will blink the READY LED and display CANCEL on the LCD display while in the Paused condition.*

Pressed for Special functions

The following functions are only available on the FM4602 and FM 4603 models.

Button	Function
❍ PAUSE ❍ CANCEL	Enter into the printer's Setup menu. *See the Front Panel Setup Menu section for more information.*
❍ PAUSE ❍ CANCEL	If held down for more than 5 seconds, the printer will allow Language Selection. *See the Setting the Display Language section for more information.*

Note: Both buttons must be pressed at the same time for the above special functions.

LCD Display (FM4602 and 4603 models only)

For the model FM4602/FM4603 the front panel is equipped with a 2 row by 16 character LCD display.

The basic function of the display is:

- Display the printer status
- Display the printer settings
- Display's prompts requesting input data from a keyboard or barcode reader.
-

Standard Printer

After power on the following message is displayed on the LCD

READY (203,PPLA)

The first parameter is either 203 or 300. It stands for the printer's resolution.

FM4602 will display 203

FM4603 will display 300

The second parameter indicates the emulation (printer language), PPLA or PPLB.

With Keyboard Option installed

If a keyboard is plugged in, the following message is displayed on the LCD

READY (203,PPLA)
<ESC> FOR KEYBD

With Barcode Reader Option

If a barcode reader is connected and switches 6 through 8 are in the ON positions, the displayed message will be.

READY (203,PPLA)
WITH B.C. READER

Abnormal Conditions

If any abnormal condition occurs the related message will be displayed. For example:

RIBBON OUT

Front Panel Set-up Menu

FM 4602 and FM 4603 models only

The Set-up menu is a list of printer features that affect the basic operation of the printer. These are functions that can not normally be selected using software commands. Value settings that are changed using the keypad are stored into E2PROM and are retained when power is cycled. Value settings that are changed using software commands are temporary changes and are not retained when power is cycled.

LCD and Button functionality in Set-up mode

Normal Mode

Buttons	Function
PAUSE + CANCEL	Enters into set-up mode. If in set-up mode, pressing these two keys will exit Set-up mode and return to normal mode.

Setup Mode

FEED	Pressing this button will scroll to the **next value** of the displayed feature.
PAUSE	Pressing this button will scroll to the **next Feature**.
CANCEL	Pressing this key will select the displayed value. It will also save that value into non-volatile (E2PROM) memory.

LCD Displayed Information

Below is an example of a typical displayed Feature.

```
BASE SPEED (IPS)
000            *
```

Feature name: BASE SPEED (IPS)

Feature Value: 000

Stored indicator: *

Procedure to Enter into Set-up Mode

FM 4602 and FM 4603 models only

1. Power on the printer.

2. When the " **READY**" message is displayed on the LCD, press [**PAUSE**] and the [**CANCEL**] buttons simultaneously.

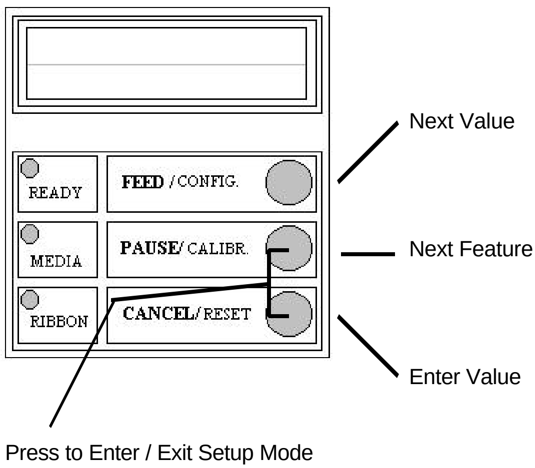


Figure 24 - Entering into Set-up Mode

3. Press [**PAUSE**] button to scroll to the feature that you want to change.

4. Press [**FEED**] button to scroll to the desired value of the displayed feature.

5. Once the desired value is displayed, press [**CANCEL**] button to save it. After pressing the [**CANCEL**] button an * should appear in the last column. The * is used to designate the stored value in non-volatile memory (E2PROM).

6. Press both [**PAUSE**] + [**CANCEL**] buttons at the same time, to return to normal mode.

Note: Do not enter set-up mode while the printer is printing or while the host is sending data.

Set-up Mode Selection Items

Item	Range	Factory Default	Remarks
CUT/PEEL POS (mm)	+ 015 to + 015	0 mm	Controls cut and peeling position.
PRINT OFFSET (mm)	+ 015 to - 008	0 mm	Controls start vertical print position. Positive value only.
TPH VER OFFS(mm)	+ 003 to - 003	0 mm	
RECOVERY PRINT	ENABLE DISABLE	ENABLE	
[1]GAP HEIGHT	MORE THAN 10, 5 to 7 mm, 8 to 9 mm.	MORE THAN 10 mm	
[2]CUTTER ROTATION	NORMAL (~4”), MORE (<3”), MORE (<2”)	NORMAL (~4”)	2”, 3” and 4”(inches) stand for the label width. Setting proper width can avoid jam.
[2]CUTTER TYPE	TYPE I, TYPE II	TYPE I	Enable the type of cutter mechanism is installed
COMPRESSED FLASH	NO COMPRESSION, COMPRESSED	NO COMPRESSION	
WIN CON LEN (mm)	0 to 254 mm	0 mm	This takes effect only when you run under Windows with bundled printer driver and use continuous media.
BASE SPEED (IPS)	0 to 4 IPS	0 IPS	This is for the PPLB emulation only. When you choose TLP2642/3642 driver the speed is limited under 2 ips.
COUNTER ON LCD	ENABLED, DISABLED	ENABLED	
MEDIA SENS. TYPE	REFLECTIVE SEE-THROUGH	REFLECTIVE	Select the proper type by the media characteristics. Do calibration before printing.
[2]CUTTER SIGNAL	CHECKED, IGNORED	CHECKED	For general media, set it to “CHECKED” except for thick media.
BACKFEED	DISABLE, ENABLE	DISABLE	This feature enables a manual Present function. It can be disabled by a software command.
[3]BACK DISTNCE(mm)	010 to 040	012	This is the distance the printer will move the form to a Presentation position.

[1] Displayed only when Switch 4 is on.
[2] Displayed only when Switch 3 enabled
[3] Displayed only when the BACKFEED feature is enabled.

Notes:

1. To verify that a feature has been properly changed, cycle power on the printer.
2. Make sure the settings you desire has an * character by the value.
3. When changing the Media Sensor Type feature (Reflective and See-through); be aware that the See-through sensor is 1 mm to the left of the Reflective sensor.
4. If graphics are stored with compression in the flashboard, do not use them under non-compression mode.

Setting Display Language

The printer can display messages, error condition, and feature menus in multiple languages. This capability does not affect the printed text. The printer's LCD display supports six languages:

English,
French,
German,
Italian,
Spanish and
Portuguese

To change the currently displayed language

1. Press and hold the PAUSE and CANCEL buttons at the same time.
2. Hold both buttons for about 5 seconds.
3. When the buttons are released the following is displayed

LANGUAGE
ENGLISH *

4. Press FEED button to scroll the next available language.
5. Press CANCEL button to select the language for your need.
6. Pressing PAUSE or PAUSE+CANCEL buttons exits setting and enters normal mode.

Item	Range	Factory Default
LANGUAGE	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH, PORTUGUESE.	ENGLISH

Back Panel

The rear panel includes

- An 8-bit DIP switch (FM4602/FM4603 models only)
- A 36-pin Centronics connector
- A 9-pin serial connector
- A PS/2 keyboard connector (FM4602/FM4603 only)
- A power switch and power connector

Caution: On the FM4402 model there is a voltage selection switch for selecting the appropriate line voltage. Make sure to set the correct voltage (115V or 230V) before powering up the printer, otherwise the printer will be damaged.

FM 4602/4603

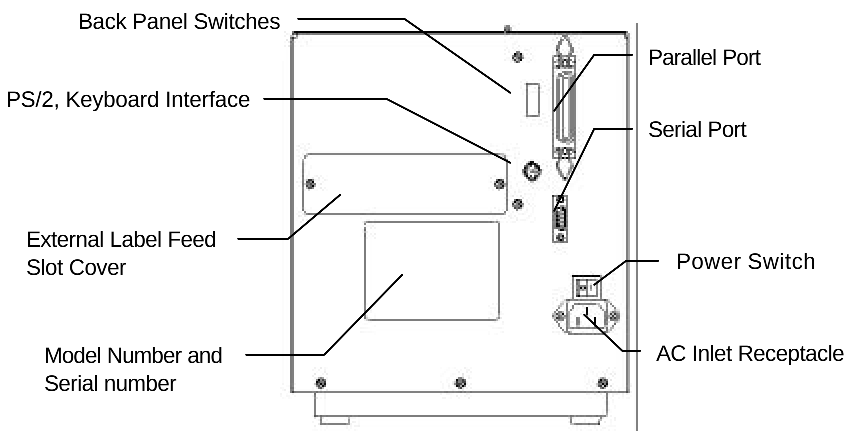


Figure 25 - Back Panel FM4602/FM4603

FM 4402 Models

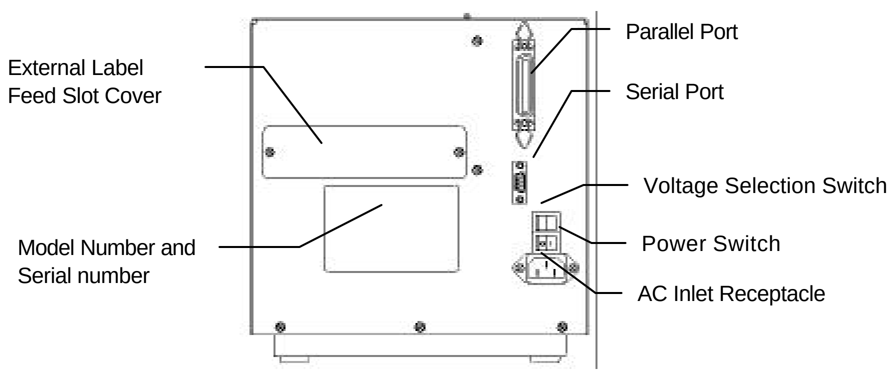
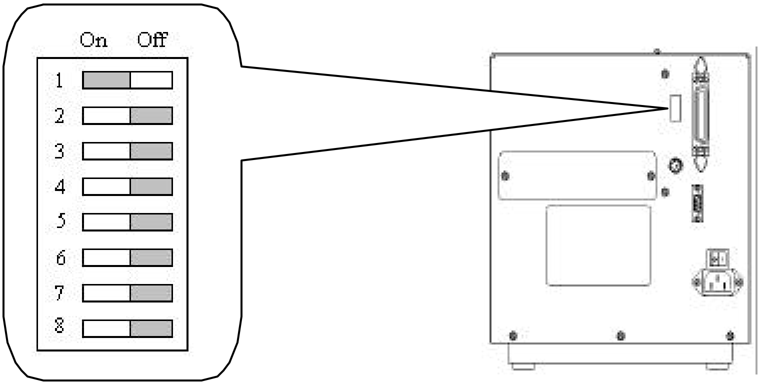


Figure 26 - Back Panel FM4402

Back Panel Switches (FM4602 and FM4603 models only)



Back Panel Switches are only available on FM4602 and FM4603.

Any change in switch position is not registered until Power is cycled.

Standard Switch Settings

Switch Number	Function	Position setting	Description
1	Thermal Transfer Ribbon	ON	Ribbon is installed. Thermal transfer mode. Enables end-of-ribbon detection. If end-of-ribbon occurs the RIBBON and READY indicators will blink.
		OFF	Ribbon is not installed. Direct thermal.
2	Euro Mark	ON	PPLA: Alternate (printable) control code set. PPLB: Euro dollar symbol is used to replace the character '_'.
		OFF	PPLA: Standard control set. PPLB: No Euro symbol.
3	Cutter	ON	Cutter is installed.
		OFF	Cutter is not installed.
4	Gap Size	ON	The gap length is more than 4 mm.
		OFF	Media with normal gap or continuous media.
5		ON	Peeler is installed.
		OFF	Peeler is not installed.

Switches 6, 7 and 8 are used to determine the printer's Baud Rate.

6	7	8	Baud rate
OFF	OFF	OFF	9600 (default)
ON	OFF	OFF	2400
OFF	ON	OFF	4800
ON	ON	OFF	19200
OFF	OFF	ON	38400
ON	ON	ON	Special Setting: 9600 and for barcode reader

Special Switch Settings:

Switch number / Special Condition	1	2	3	4	5	6	7	8
Sets Baud Rate to 9600 for a Bar Code Reader	N/A	N/A	N/A	N/A	N/A	On	On	On
Clears Objects from the Flash that are used with PPLB emulation. **	N/A	N/A	On	N/A	On	N/A	N/A	N/A

N/A - Switch position has not function in the condition.

Note: Make sure to set switch 3 and 5 their original positions.

PS/2 Keyboard I/F (FM4602 and FM4603 models only)

The special keyboard interface connector is available on the FM4602/FM4603 models. This is for PS/2 keyboard or barcode reader with keyboard wedge. When this interface is used, using the Centronics or RS-232 communication ports is discouraged. Use of the PS/2 keyboard interface may only be operated in stand-alone mode.

The printer can automatically detect the keyboard. But if you use a barcode reader you should set switches 6, 7 and 8 to the ON positions.

Before a keyboard or a barcode reader is connected make sure that the printer is set for the following configuration.

- Make sure that the printer has the PPLB emulation installed.
- Make the desired form is download to the printer.
- Make sure that a PS/2 keyboard or barcode reader with KB wedge is available.

  (Refer to the Appendix for Stand-Alone Operation for further information.)

COMMAND QUICK REFERENCE

This section lists all software commands of the printer. For more information please refer to the Programmer's Manual.

Command Set for PPLA

The following commands are for Printer Programming Language A.

Note: In this quick reference all variable data is represented in Italics.

System Setting Commands

These commands will cause the related parameters to be saved in the non-volatile memory, E2PROM. The parameters will be stored unless they are changed by another command, or reset from the panel.

Command	Description	Parameter	Factory default
<STX>KI4n	Media empty check	n : '0' - disable, '1' - enable.	Enabled
<STX>KI7n	Set ribbon mode	n : '0' – DT, '1' – TT.	TT with ribbon (for FM4402)
<STX>KI8n	Set baud rate	n : '0' – 9600, '1' – 600, '2' – 2400, '3' – 19200, '4' – 4800, '5' – 38400, '6' – 1200, '7' – 9600.	9600 baud. (for FM4402)
<STX>KI;n	Control Code types	n : '0' - selects standard control codes. '1' - Select alternate control codes	For FM4402
<STX>KXnnnn	Set continuous label length	nnnn : a 4-digit number, in mm	
<STX>KI<m	Set symbol set for ASD smooth font set	m : '0' - USASCII, '1' - United Kingdom, '2' - Spanish, '3' - Swedish, '4' - French, '5' - German, '6' - Italian, '7' - Danish/Norwegian.	0 for USASCII

Interaction Commands

Such commands only apply to the serial port and allow the host to understand the status and configuration of the printer.

Command	Description	Response from printer	Contents of the Response
<SOH>#	Reset	Yes	<XOFF><XON>T
<SOH>A	Send a readable status string	Yes	<8 bytes, Y/N> <CR> byte 1 : Y - printer busy byte 2 : Y - paper out byte 3 : Y - ribbon out byte 4 : N (always) byte 5 : Y - printing byte 6 : Y - printer paused byte 7 : Y - label presented byte 8 : N (always)
<SOH>B	Toggle pause condition	No	
<SOH>E	Send the number of labels to be printed	Yes	e. g. 0000<CR> no label left to be printed
<SOH>F	Send status byte	Yes	n<CR> Same as <SOH>A, except bits 1 to 8 corresponds to bytes 1 to 8 of <SOH>A.

Notes:

1. Control codes for the printer commands.

Symbol	Code (hexadecimal)
XON	11H
XOFF	13H
STX	02H
SOH	01H
ESC	1BH
LF	0AH
CR	0DH

2. There is no space code in each command.

System Level Commands

Command	Description	Remarks
<STX>a	Enable page/job echo characters	
<STX>c*xxxx*	Set continuous paper length and disable edge sensor	
<STX>D*xxxxxxx*	Memory dump**	*xxxxxxx* : memory address in HEX value
<STX>E*xxxx*	Set copy count for stored label	
<STX>e	Enable edge sensor	
<STX>F	Feed a page	
<STX>f*xxx*	Back feed from top position	
<STX>G	Print stored label	
<STX>I	Download graphics	either PCX, BMP, PCX or HEX format
<STX>J	Set pause for each label	
<STX>j	Cancel pause	
<STX>KQ	System configuration details	
<STX>L	Enter label formatting state	
<STX>M*xxxx*	Set maximum label length	
<STX>m	Set measurement in metric	
<STX>n	Set measurement in inches	
<STX>O*xxxx*	Set start of print position	
<STX>P	Enable data dump	
<STX>Q	Clear memory (fonts & graphics)	
<STX>r	Select reflective sensor	
<STX>S*n*	Set feed rate for motor	*n* : 'A', 'B' or 'C'
<STX>T	Print test pattern	
<STX>V*n*	Set Cutter or Peel and Present configuration	*n* : '1' - enable Cutter, '4' - enable Peel and Present
<STX>v	Printer version information	
<STX>W*n*	Graphics/fonts/labels and memory status details	*n* : 'G', 'F' or 'L'. through RS-232
<STX>x	Release file from printer memory	

Formatting Commands

Command	Description
:*xxxx*	Set cut amount
A*n*	Set print mode *n* : ‘1’- exclusive, ‘2’ - transparent
C*xxxx*	Set horizontal offset
c*xx*	Set cut amount
D*wh*	Set pixel width and height
E	Form feed and return to system level command mode
G	Store previous data to global register
<STX>S*n*	Retrieve from global register. *n* : global register ID
H*xx*	Set heating value, *xx* = 01 to 20
M	Toggle the mirror mode
m	Set measurement in metric
n	Set measurement in inches
P*n*	Set print speed. *n* = ’A’, ‘B’, or ‘C’ **
Q*xxxx*	Set copy count
R*xxxx*	Set vertical offset
r<*n..n*>	Retrieve label data from printer buffer. <*n..n*> : label name
sm<*n..n*>	Save label data to printer buffer. m : memory module, <*n..n*> : label name
T*xx*	Set end-of-line code, *xx* : hex value
z	Change slash zero to normal zero (0).
+*xx* >*xx*	Make auto increment for numeric or alphanumeric, *xx* : count
-*xx* <*xx*	Make auto decrement for numeric or alphanumeric, *xx* : count
^*xx*	Set count amount, *xx* : count

Notes: The formatting and editing commands should be grouped together, leaded by <STX>L and ended by E command.

: The parameter range is from ‘A’ to ‘K’ (1 to 6 ips) for the model FM4602/FM4603, and for model FM4402 it is from ‘A’ to 'E' (1 to 4 ips).

Editing Commands

Command structure	Command function
R*thveeeyyyyxxxx*<string><CR>	Printing text and bar codes

Components of command	Description	Variables
R	print direction	‘1’,’2’,’3’ or ‘4’ (rotation)
t:	object type	‘0’ ~ ‘9’ and ‘:’ (fonts) [**], ‘A’ ~ ‘Z’ and ‘a’ ~ ‘z’ (bar codes), ‘X’ (lines or boxes), ‘Y’ (graphics).
h	width multiplier	‘1’ to ‘9’ and ‘A’ to ’ O’. ‘0’ stands for default.
v	height multiplier	‘1’ to ‘9’ and ‘A’ to ’ O’, ‘0’ stands for default.
eee	bar code height	This is ignored for box, line and graphics. It represents point size for font ‘9’ and symbol set for Courier font[**].
yyyy	Y coordinate	
xxxx	X coordinate	
<string>	depends on object types	

Object	Command Structure	Description
L : line (if t is ‘X’)	L*wwwhhh*	www : width, hhh : height.
L : line (if t is ‘X’)	l*wwwwhhhh*	wwww : width, hhhh : height.
B : box (if t is ‘X’)	B*aaabbbcccddd*	aaa : horizontal width bbb : vertical height ccc : thickness of top and bottom edges ddd : thickness of left and right bars
B : box (if t is ‘X’)	b*aaaavvvvccccdddd*	aaaa : horizontal width vvvv : vertical height cccc : thickness of top and bottom edges dddd : thickness of left and right bars
Bar code (if t is in the range ‘A’ to ‘Z’ or ‘a’ to ‘z’)	bar code data	The bar codes (and human readable text) will be printed according to the selected bar code type (‘A’ ~ ‘Z’ or ‘a’ ~ ‘z’).
Text (if t is in the range ‘0’ to ‘9’)	text data	Such text data will be printed according to the selected font (‘0’ ~ ‘9’).
	file name	If t is ‘Y’ and the file was downloaded by <STX>I command.

Note: **Model FM4603 does not include Courier fonts.

Font Downloading Commands

Such commands are only used for soft fonts with PCL format.

Command	Description
ESC*c###D	assign the soft fonts ID number (### : 100 ~ 999)
ESC)s###W	download font descriptor (### : length of font descriptor)
ESC*c###E	set character code (### : 1 ~ 255)
ESC(s###W	download character descriptor and image (### : length of character descriptor and image)

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Command Set for PPLB

The following commands are for Printer Programming Language B.

All PPLB commands must be ended with <LF> or <CR>+<LF> codes. No spaces are allowed between parameters and leading command character.

Command	Description	Parameter
A*x,y,rot,font,hm,vm,nr,string*	Print text.	*font*: 1 to 5 for internal font and A to Z for soft font.
B*x,y,rot,bar,nw,ww,v,hum,string*	Print Bar Code. bar: barcode selection	*nw*: width of narrow bar ww: width of wide bar *v*: bar code height *hum*: B for printing readable code and N for disabling.
b*x,y,type,[…]*	Print 2D Bar Code	type: M for Maxi code and P for PDF 417
C*cn,dn,just,step,string*	Counter declaration	cn: counter index dn: digit number *just:* L,R,C and N for field justification *step:* step value
D*p1*	Heat setting	*p1:* density, 0 to 15
EI	Print soft font names	
EK*string*	Delete soft font	*string:* soft font name or "*" to delete all soft fonts
ES*string*, ….	Download soft font	
FE	End form store	
FI	Print form names	
FK*string*	Delete form	string: form name or "*" to delete all forms
FS*string*	Execute form	string: form name
FS*string*	Save form	string: form name
GG*x,y,string*	Print graphics	string: graphic name
GI	Print graphic list	
GK*string*	Delete graphics	string: graphic name or "*" to delete all graphics
GM*string,size*<LF>…	Store graphics	string: graphic name size: graphic size in byte
I*p1,p2,001*	Select symbol set**	p1: 7 or 8 data bits p2: symbol set

Command	Description	Parameter
JB JF	Disable back feed** Enable back feed**	
LE*x,y,hlen,vlen*	Line draw by exclusive	*hlen:* horizontal length *vlen:* vertical length
LO*x,y,hlen,vlen*	Line draw by OR	
LW*x,y,hlen,vlen*	Draw white line	
N	Clear frame buffer	
O[,C][,N][,D]	Select options	
P*p1[,p2]*	Print label	p1: label set number p2: copy number of each label
PA*p1*[,*p2*]	Print automatic	
Q*p1,p2[,+p3]*	Set label and gap length**	p1: label length p2: gap length p3: offset length
q*w*	Set label width**	w: label width
R*x,y*	Set origin point**	
S*p1*	Set print speed	p1: speed value, 4 to 6
U	Print configuration	
UN US	Disable Error Report Enable Error Report	
Vvn,dn,just,string	Define variable	vn: variable index dn: digit number just: L,R,C and N for field justification
X*x,y,thick,ex,ey*	Draw box	ex, ey: end position thick: line thickness
ZT ZB	Set print direction	ZS: print from top ZB: print from bottom
ZS ZN	Enable/disable store-to-Flash++	power-on default is ZN(disabled)
?	Download variables or counters	

Command	Description	Parameter
d1,*hadj*	Set horizontal position adjustment**	hadj: adjustment in dots.
d2,*hadj*	Set horizontal position adjustment	same as d1, except it is no saved to E2PROM

Notes:

1. *x* and *y* represent horizontal and vertical coordinate values.
2. *hm* and *vm* stand for horizontal and vertical multipliers.
3. *rot* is the rotation direction, its value is from 0 to 3.
4. *nr* is either N for normal printing or R for reverse printing.
5. *string* is bracket by double quote marks, e.g. “text”.
6. ** Commands will cause the printer to save parameters to permanent storage (E2PROM).
7. ZS takes effect only if flash memory board is installed.

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PRINTER DRIVER

The bundled printer driver is used for applications under Windows 95/98/2000 and Windows NT. You may run any popular software application, such as MS-Word, as long as they are for Windows and printing the contents to the printer through the designated driver.

Before starting installation you should:

- ♦ Check the contents of the driver to ensure it is complete.
- ♦ Make a backup copy of the driver.
- ♦ Read the README.TXT file for installation guide and change notices.

Under the root directory of the floppy or CD there are the following sub-directories

- WIN98
- WIN95
- NT40
- WIN2000

Select the proper directory for installation according to your operating system.

Driver Installation

- Windows needs to be running.
- Insert the appropriate printer driver diskette into the floppy disk drive.

1. Click the “Start” button.
2. Select “Settings”, then “Printers”
3. Double click the “Add Printer” icon.
4. At the Add Printer Wizard, Click “Next”.
5. Specify the “Network” or “Local” button and click the “Next” button.
6. Select “Installation from Floppy Disk” or "Have Disk".
7. Enter the floppy drive and path.

   A:\WIN95 A:\NT40

   A:\WIN98 A:\WIN2000

8. Select the printer name to be installed on the “List of Printers”, window. Click “Next”.
9. Select the communication port for the label printer. For parallel port, select “LPT1:”, “LPT2:” or “LPT3”, for serial port select “COM1:” or “COM2:”., Click "Next".
10. You may wish to change the Printer Name to be more descriptive. Also select this printer as the Default printer. Click "Next".
11. Select whether you want a test page to be printed, then click on Finish.
12. After the related files have been copied to your system, the procedure is complete.

Notes:

1. If you are just updating your driver, make sure to delete the previous version first.
2. If you install new bar code application software like BarTender, LabelView or CodeSoft, the driver should be activated and set as the current printer driver.

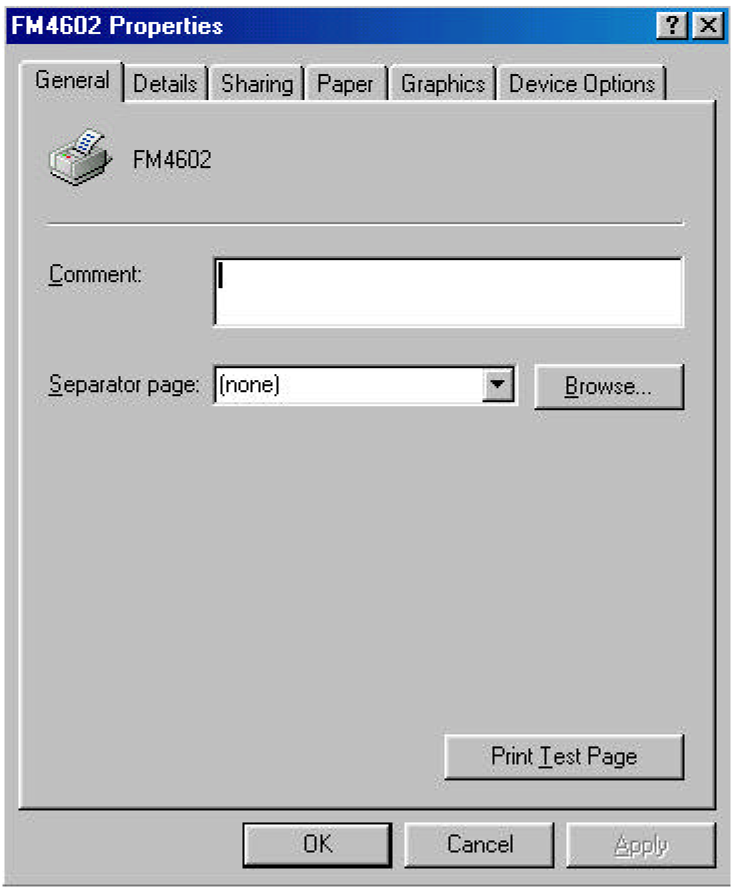
How to Use the Driver

After the driver is installed, you can open the Printer's dialogue box and make parameter settings:

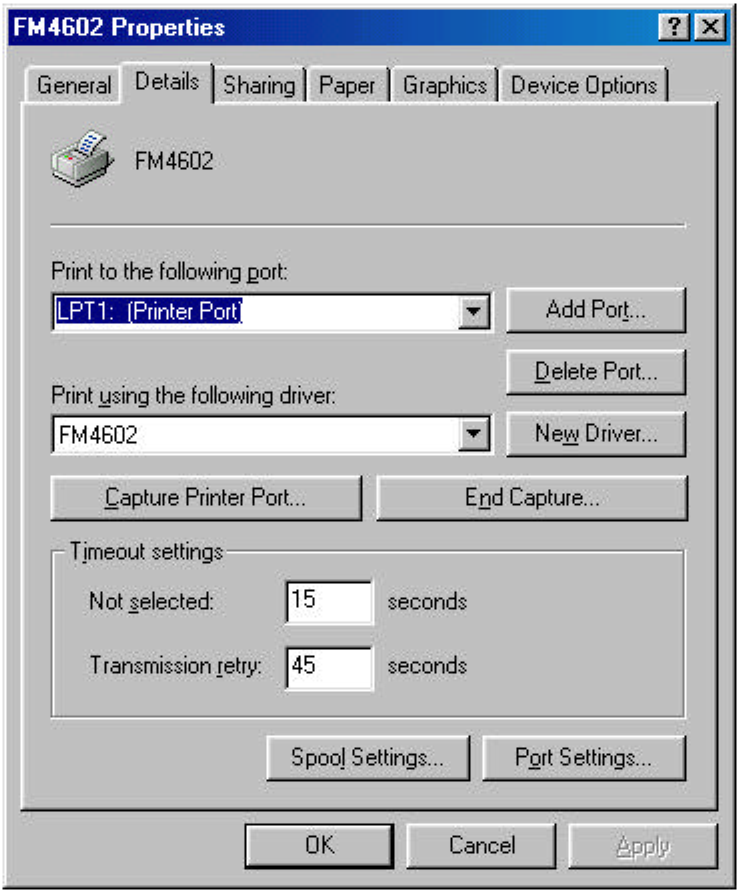
Windows 95/98/2000/NT4.0 - Start ➩ Settings ➩ Printers ➩ Printer *Name* ➩ Properties

Parameter setting:

After entering the Selected Printer you can change the parameters to meet your configuration and needs. The following Format is from Windows 98.



Details Tab



Print to the following port

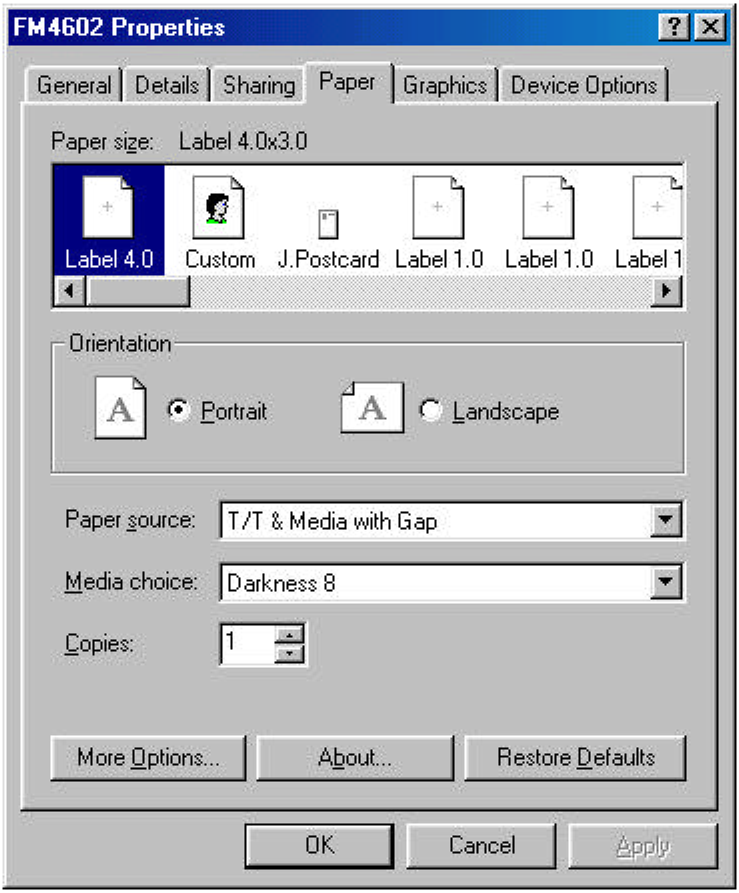
This allows you to select the IO port to link with the printer. The port may be one of parallel (LPT), serial (COM), network port or file.

If the communication port is the serial port (COM1: or COM2:), check the baud rate and flow control as they must be consistent between host and printer. The printer's baud rate is printed on the following the self-test page. The factory default baud rate is 9600.

Print using the following driver

This must match the printer that is attached (for the FM4402, FM4602 or FM4603) when using the label printer.

Paper



Paper size

Select the label size for your printer. The selected label size may be a little longer than that of the physical label.

Orientation

Set portrait or landscape according to the print direction.

Paper source

Select one of the following items:

T/T & Media with Gap

T/T & Media with Black Line

T/T & Continuous Media

D/T & Media with Gap

D/T & Media with Black Line

D/T & Continuous Media

T/T stands for Thermal Transfer (ribbon) mode and D/T for Direct Thermal model (without ribbon).

Media choice

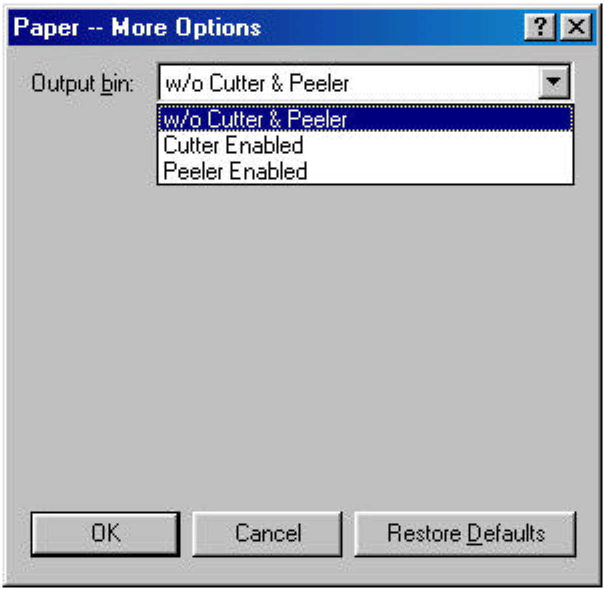
Set the heat value or darkness from this field. The darkness value ranges from 0 to 15.

Copies

This function designates the number of printed copies of each page.

More Options

To use the cutter and peeler function you need to select **More Options** and select one of the items.

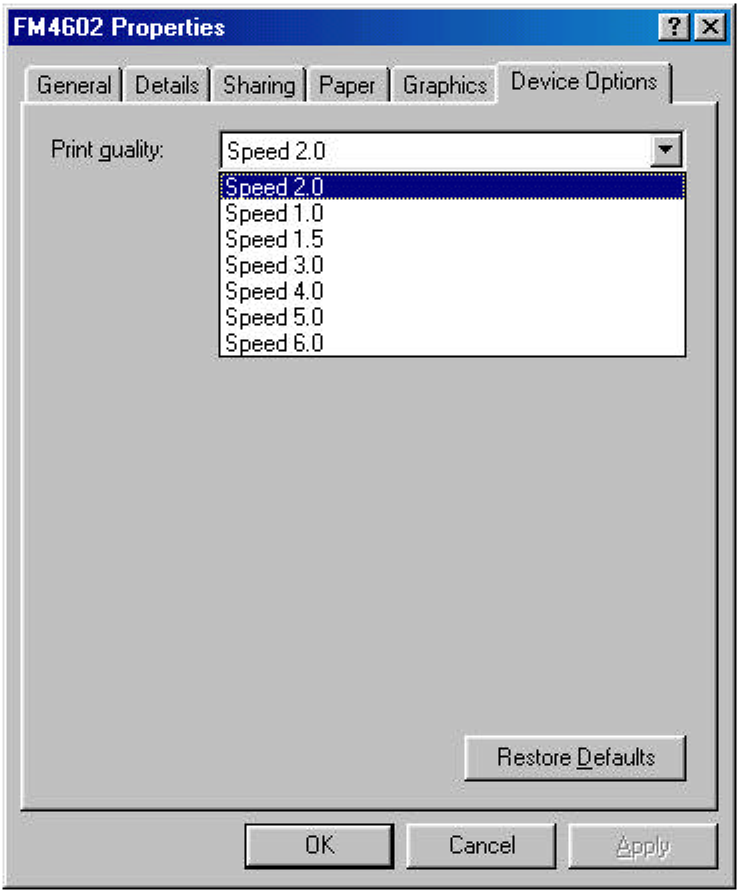


w/o Cutter and Peeler

Cutter Enabled

Peeler Enabled

Device Options



Note: The maximum speed varies depending on model:

Fm 4402: Max Speed is 4.0

FM 4602/4603: Max Speed is 6.0

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TROUBLESHOOTING AND MAINTENANCE

Troubleshooting

Generally, when a malfunction or an abnormal condition occurs, the "READY" LED will keep blinking. Printing and communication between the host and printer will stop.

To understand what the problem is you should first check the LED indicators and LCD display on the front panel:

After the problems have been solved, press CANCEL to continue printing.

READY and MEDIA LED's blinking

LCD Displays MEDIA OUT

Possible Problems	Solutions	Remarks
Missing gap	- Check the media path - Check the position of the media sensor. - Check the paper sensor	If using continuous media with Windows then in the Paper Tab section **continuous** should be selected.
Media out	- Check the Media Supply Roll	Verify that the media is properly positioned between the Media Sensor Arms.
Media not installed	- Install a Media roll	
Media jam	- Clear the jam	Verify that the media is routed correctly.
Printhead module is not closed	- Close and latch the printhead module	
Media Calibration lost	Run the Label Sensor Calibration procedure.	

Ready and Ribbon LED Blinking

LCD displays RIBBON OUT

Possible Problems	Solutions	Remarks
Incorrect Switch setting	Switch 1 should be off	Direct Thermal media does not use a ribbon.
Ribbon has run out	Supply the ribbon roll	
Ribbon jam	Recover the jam	
Ribbon sensor error	Replace the ribbon sensor	

Note: The FM402DT does not use a ribbon and should not display this error.

Only the Ready LED blinks

FM4402 printer

Possible Problems	Solutions	Remarks
Serial I/O error	Check the baud rate Check the flow control	
Memory full	Add the extension RAM	
Cutter failed, or jam at cutter	Check the cutter Clear the jam	Only when cutter is installed.
Hardware error	Call for service	

Only the Ready LED blinks

FM4602 and FM4603 printer

LCD display	Possible Problems and Solutions	Remarks
SERIAL IO ERROR	. Verify baud rate, format or protocol between host and printer . Check switches bits 6, 7 and 8.	Not Applicable to the Parallel port.
CUTTER FAILED	. Check the media . Check the connection between cutter and main board. . Call for service.	For FM4602 and FM4603 verify switch 3 should be ON for cutter.
MEMORY FULL	. Check the graphics and soft font formats from host.	Make sure to delete the graphics and soft fonts, if the application software no longer uses them

Host indicates "Printer Time Out"

- Verify that the communication cable (parallel or serial) connection is secured to both the port on the PC and to the connector on the printer.
- Verify that the printer is power turned on (the power switch is at position '**1**' and the power LED is illuminated).

The data has been sent, but there is no output from the printer

- Check the active printer driver, it should be Label Dr. for your Windows system and the label printer.
- Check the emulation and the print (command) file.

Vertical streaks in the printout usually indicate a dirty or faulty Printhead

Clean the printhead first, if they still persist, replace the printhead.

Unstable ribbon roll rotation

Check the label path and make sure the head latch is securely closed.

Poor printout quality

- The ribbon may be not qualified.
- The media may be not qualified.
- Adjust the Darkness (heat temperature).
- Slow down the print speed.

Recovery

In order to continue your print jobs after any abnormal conditions have been recovered, simply press the **CANCEL** button or restart the printer. Make sure that the LED indicator is illuminated and not blinking and remember to send your files to the printer again.

Preventive Maintenance

Before performing preventive or any other maintenance be sure to turn off the printer power.

Cleaning the Printhead (TPH)

1. Turn off the printer, open the covers, Printhead module and remove the ribbon.
2. Rub the printhead with a piece of cotton, which has been moistened with alcohol.
3. Check for any traces of black coloring or adhesive on the cotton after cleaning.
4. Repeat if necessary until the cotton is clean after it is passed over the head.

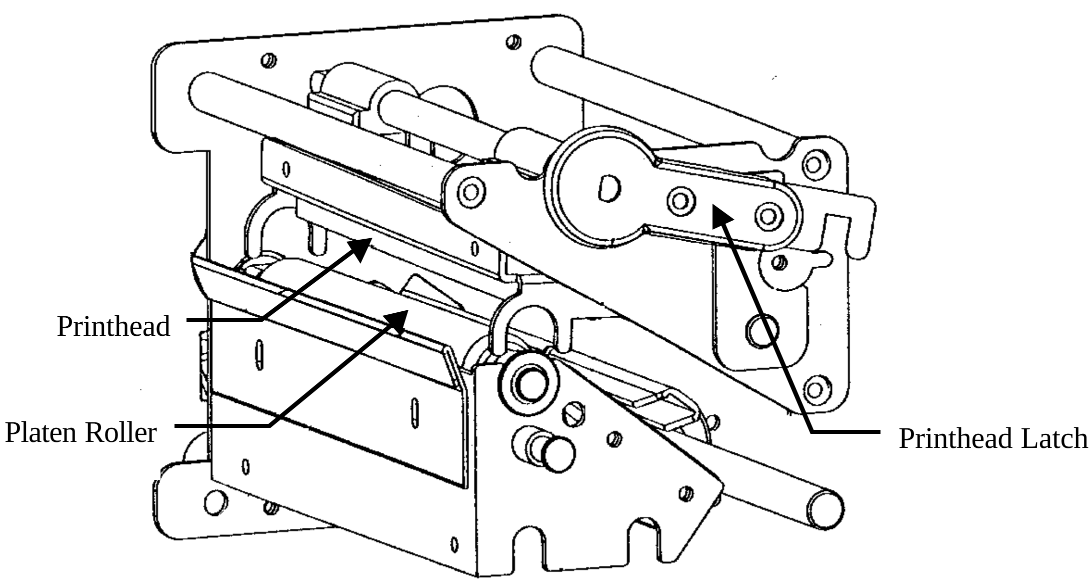


Figure 27 - Printhead (TPH) Maintenance

Note: The printhead should be cleaned at least every time the ribbon is replaced and more often depending on actual usage and conditions.

Cleaning the Platen roller

Using cotton swab moistened with alcohol, clean the roller.

Note: The roller should be cleaned whenever it has been in contact with foreign materials such as dust or adhesives.

Cleaning the media compartment

Clean the media compartment with cotton, which has been moistened with mild detergent.

Every time a media roll is printed this compartment should be cleaned to reduce the incidence dust.

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Appendix A: Printer Specifications

General Specifications

Specification	Model FM4402	Model FM4602	Model FM4603
Resolution	203 DPI (8 dots/mm)	203 DPI (8 dots/mm)	300 DPI (12 dots/mm)
Print method	Direct thermal and thermal transfer		
Onboard RAM	512K bytes	2M bytes	
Maximum label roll diameter	8 in. (203 mm) outside diameter 1.5 in. to 3.0 in. (38 mm to 76 mm) inside diameter		
Label indexing	Black stripe and gap		
Ribbon types	Wax, Wax/resin and Resin		
Ribbon size	OD 3 in. (75mm) ID 1 in. (25 mm)		
I/O Interface	RS-232 serial and Centronics parallel ports with auto polling	RS-232 serial and Centronics parallel ports with auto polling for both ports. PS/2 keyboard I/F for keyboard and barcode reader	
Dimension	9.8 in. x 16.0 in. x 10.2 in. (width x depth x height) (250 mm x 410 mm x 260 mm)		
Weight	26.8 lbs. (12 Kg)	24.6 lbs. (11 kg)	
Electrical	CE, UL, CUL, FCC class A 110/220 VAC ±10%, 50/60 Hz		
Operating temperature	40° to 140°F (4° to 38°C)		
Storage temperature	-40° to 140°F (-40° to 60°C)		
Humidity	15 to 85% RH		
Windows driver	Win95, 98, 2000 and NT		
Printer emulation	PPLA or PPLB		
Media type	Roll-feed, die-cut, continuous, fan-fold, tags, ticket in thermal paper or plain paper.		
Maximum print width	4.09 in (104 mm)	4.09 in (104 mm)	4.25 in (108 mm)
Maximum print length	45 in. (1143 mm)**		33 in. (838 mm)
Maximum print speed	1 to 4 inches per second. (25.4 to101.6mm)	1 to 6 inches per second (25.4 to 152.4mm)	
Front panel	3 buttons 3 LED indicators	3 buttons 3 LED indicators LCD display (16x2)	
Rear panel	Parallel and serial I/F	8-bit DIP switch, PS/2, parallel and serial I/F	

Fonts, Bar Codes and Graphics

The specifications for fonts, bar codes and graphics depend on the printer emulation. The emulation is a printer programming language, through which the host can communicate with your printer. There are two printer programming languages for all models FM4402, FM4602 and FM4603; they are **PPLA** and **PPLB**.

Printer Programming Language A, PPLA

Specification	Model FM4402	Model FM4602	Model FM4603
General fonts	7 alpha-numeric fonts, OCR A and OCR B		
ASD smooth fonts	6, 8, 10, 12, 14 and 18 points		4, 6, 8, 10, 12, 14, and 18 points
Symbol sets for smooth fonts	USASCII, UK, German, French, Italian, Spanish, Swedish, and Danish/Norwegian		
Courier fonts	8 symbol sets (PC, PC-A, PC-B, EAMA-94, Roman , Legal, Greek and Russian)		
Soft fonts	Downloadable PCL fonts		
Font expandability	1x1 to 24x24		
Bar code types	Code 39, Code 93, Code 128/subset A,B,C, Codabar, Interleave 2 of 5, UPC A/E/2 and 5 add-on, EAN-8/13, UCC/EAN-128, Postnet, Plessey, HBIC, Telepen and FIM. MaxiCode and PDF417 (2D symbologies).		
Graphics	PCX, BMP, IMG and HEX formats		

Printer Programming Language B, PPLB

Specification	Model FM4402, FM4602 and FM4603
General fonts	5 fonts with different point sizes
Symbol sets (Code pages)	8 bits: code page 437, 850, 852, 860, 863 and 865. 7 bits: USA, British, German, French, Danish, Italian, Spanish, Swedish and Swiss.
Soft fonts	Downloadable soft fonts
Font expandability	1x1 to 24x24
Bar code types	Code 39(checksum), Code 93, Code 128/subset A,B,C, Codabar, Interleave 2 of 5(checksum), Matrix 25, UPC A/E 2 and 5 add-on, EAN-8/13, Code 128UCC, UCC/EAN, Postnet, German Postcode. MaxiCode and PDF417 (2D symbologies).
Graphics	PCX and binary raster
Stand-alone operation without host	FM4402 : KDU FM4602/FM4603: Barcode reader or PC Keyboard

Optional Accessories

- Serial (RS-232) cable
- Peel and Present
- Cutter
- Flash memory (512 K bytes for FM4402 only)
- Font board

Notes: The font board and flash modules use the same connector they cannot be installed at the same time.

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Appendix B: INTERFACE SPECIFICATIONS

Introduction

This appendix presents the interface specifications of I/O ports for the printer. These specifications include pin assignments, protocols and detailed information about how to properly interface your printer with your host or terminal.

Serial

The RS-232 connector on the printer side is a female, DB-9.

Pin	Direction	Definition
1	In	DSR
2	In	RxData
3	Out	TxData
5	-	Ground
6	Out	DTR
7	Out	RTS
8	In	CTS
9	Out	+5V

Note: Pin 9 is reserved for KDU (keyboard device unit) only, therefore do not connect this pin if you are using a general host like a PC.

Connection with host:

Host 25S (PC or compatible)		Printer 9P
DTR 20	....	1 DSR
DSR 6	....	6 DTR
TX 2	....	2 RX
RX 3	....	3 TX
CTS 5	....	7 RTS
RTS 4	....	8 CTR
GND 7	....	5 GND

Host 9S (PC or compatible)		Printer 9P
DTR 4	....	1 DSR
DSR 6	....	6 DTR
TX 3	....	2 RX
RX 2	....	3 TX
CTS 8	....	7 RTS
RTS 7	....	8 CTS
GND 5	....	5 GND

Alternatively you can just connect the 3 wires in the following way.

Host 25S (PC or compatible)		Printer 9P
TX 2	....	2 RX
RX 3	....	3 TX
GND 7	....	5 GND
pin 4		
pin 5		
pin 6		
pin 20		

Host 9S (PC or compatible)		Printer 9P
TX 3	....	2 RX
RX 2	....	3 TX
GND 5	....	5 GND
pin 4		
pin 6		
pin 7		
pin 8		

The simplest way to connect to other hosts (not PC compatible) or terminals is:

Printer		Terminal/Host
Pin 2- RxData	....	TxData
Pin 3- TxData	....	RxData
Pin 5- Ground	....	Ground

In general as long as the data quantity is not too large or you use Xon/Xoff as flow control, there will be no flow control issues.

Serial port settings

Baud rate: 2400, 4800, 9600, 19200 and 38400.

To change the Baud Rate:

FM4402: Send the <STX>KI8*n* command to the printer. See the **System Setting Commands** section for more details.

FM4602/4603: The switches on the back of the printer control Baud Rate. See the **Back Panel Switches** section for more details

Data format: always 8 data bits, 1 start bit and 1 stop bit.

Parity: always no parity

Handshaking: XON/XOFF as well as CTS/RTS (hardware flow control).

Note: If you run an application with the bundled printer driver under Windows and use the serial port, you should check the above parameters and set the flow control to "Xon/Xoff" or "hardware".

Parallel (Centronics)

The parallel port is a standard 36-pin Centronics. Its pin assignments are listed as following.

Pin	Direction	Definition	Pin	Direction	Definition
1	In	/STROBE	13	Out	SELECT
2	In	Data 1	14,15		NC
3	In	Data 2	16	-	Ground
4	In	Data 3	17	-	Ground
5	In	Data 4	18		NC
6	In	Data 5	19 to 30	-	Ground
7	In	Data 6	31		NC
8	In	Data 7	32	Out	/Fault
9	In	Data 8	33 to 36	-	NC
10	Out	/ACK			
11	Out	BUSY			
12	Out	PE			

Auto Polling

Both the serial and parallel ports are active at the same time on this printer; i.e. data can be received on either one, however no provision is made for port contention. If data is transmitted to both ports simultaneously, it will cause the data in the received buffer to be corrupted.

Appendix C: PRINTER STATUS

The printer has built-in monitors for the status. If the printer is equipped with the LCD module the printer status can be displayed on it. The display on LCD is just for models FM4602 and FM4603.

LCD display	Blinking LED	Description
PAUSE	READY	The printer is in a pause state. Press PAUSE or CANCEL to return to normal state.
MEDIA OUT	MEDIA READY	The media is uninstalled or used up. Load new media to the printer.
RIBBON OUT	RIBBON READY	The ribbon is uninstalled or end-of-ribbon occurred. Load new ribbon to the printer. If using Direct Thermal media verify that Switch 1 is off.
SERIAL IO ERROR	READY	The format or baud rate of the RS-232 communication may be incorrect. Verify host and switches 6 to 8.
CUTTER FAILED	READY	The cutter can not cut off the media, check the media and cutter.
MEMORY FULL	READY	The printer buffer is full. Possibly caused by the loaded soft fonts, graphics or forms. Check the format of these data.
HEAD OPEN	READY	The printhead latch is not closed. To print the label the head latch must be closed.
P. SENSOR O.R.	READY	The media sensor is out of range during calibration. Make sure the media is installed and the label sensor is put under the media.

Appendix D: ASCII TABLE

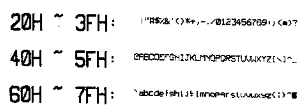
<table>
<tr><th></th><th>0</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th></tr>
<tr><td>0</td><td>NUL</td><td></td><td></td><td>0</td><td>@</td><td>P</td><td>`</td><td>p</td></tr>
<tr><td>1</td><td>SOH</td><td>XON</td><td>!</td><td>1</td><td>A</td><td>Q</td><td>a</td><td>q</td></tr>
<tr><td>2</td><td>STX</td><td></td><td>“</td><td>2</td><td>B</td><td>R</td><td>b</td><td>r</td></tr>
<tr><td>3</td><td></td><td>XOFF</td><td>#</td><td>3</td><td>C</td><td>S</td><td>c</td><td>s</td></tr>
<tr><td>4</td><td></td><td></td><td>$</td><td>4</td><td>D</td><td>T</td><td>d</td><td>t</td></tr>
<tr><td>5</td><td></td><td>NAK</td><td>%</td><td>5</td><td>E</td><td>U</td><td>e</td><td>u</td></tr>
<tr><td>6</td><td>ACK</td><td></td><td>&</td><td>6</td><td>F</td><td>V</td><td>f</td><td>v</td></tr>
<tr><td>7</td><td>BEL</td><td></td><td>‘</td><td>7</td><td>G</td><td>W</td><td>g</td><td>w</td></tr>
<tr><td>8</td><td>BS</td><td></td><td>(</td><td>8</td><td>H</td><td>X</td><td>h</td><td>x</td></tr>
<tr><td>9</td><td></td><td></td><td>)</td><td>9</td><td>I</td><td>Y</td><td>i</td><td>y</td></tr>
<tr><td>A</td><td>LF</td><td></td><td>*</td><td>:</td><td>J</td><td>Z</td><td>j</td><td>z</td></tr>
<tr><td>B</td><td></td><td>ESC</td><td>+</td><td>;</td><td>K</td><td>[</td><td>k</td><td>{</td></tr>
<tr><td>C</td><td>FF</td><td></td><td>,</td><td><</td><td>L</td><td>\</td><td>l</td><td>|</td></tr>
<tr><td>D</td><td>CR</td><td></td><td>-</td><td>=</td><td>M</td><td>]</td><td>m</td><td>}</td></tr>
<tr><td>E</td><td>SO</td><td>RS</td><td>.</td><td>></td><td>N</td><td>^</td><td>n</td><td>~</td></tr>
<tr><td>F</td><td>SI</td><td>US</td><td>/</td><td>?</td><td>O</td><td>_</td><td>o</td><td>DEL</td></tr>
</table>

Appendix E: FONTS AND BAR CODES FOR PPLA

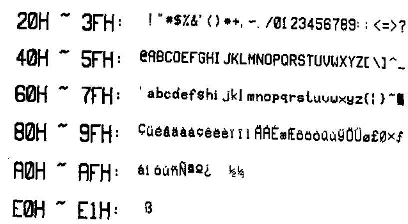
Internal Fonts

Fonts 0 to 8 have single symbol set.

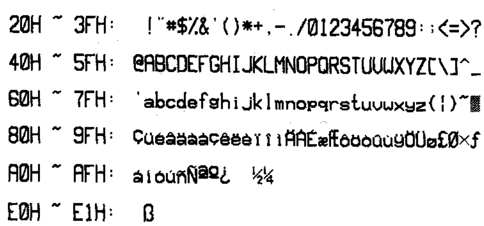
Font 0



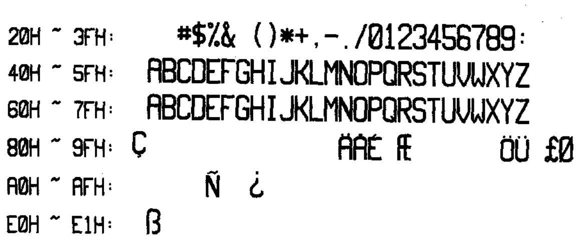
Font 1



Font 2



Font 3



Font 4

20H ~ 2FH:	#$%& ()*+,-./
30H ~ 3FH:	0123456789:
40H ~ 4FH:	ABCDEFGHIJKLMNO
50H ~ 5FH:	PQRSTUVWXYZ
60H ~ 6FH:	ABCDEFGHIJKLMNO
70H ~ 7FH:	PQRSTUVWXYZ
80H ~ 8FH:	Ç ÄÅ
90H ~ 9FH:	É Æ ÖÜ £Ø
A0H ~ AFH:	Ñ ¿
E0H ~ E1H:	ß

Font 5

20H ~ 2FH:	#$%& ()*+,-./
30H ~ 3FH:	0123456789:
40H ~ 4FH: 60H ~ 6FH:	ABCDEFGHIJKLMNO
50H ~ 5FH: 70H ~ 7FH:	PQRSTUVWXYZ
80H ~ 8FH:	Ç ÄÅ
90H ~ 9FH:	É Æ ÖÜ £Ø
A0H ~ AFH:	Ñ ¿
E0H ~ E1H:	ß

Font 6

20H ~ 2FH: #$%& ()*+,-./

30H ~ 3FH: 0123456789:

40H ~ 4FH:
60H ~ 6FH: ABCDEFGHIJKLMNO

50H ~ 5FH:
70H ~ 7FH: PQRSTUVWXYZ

80H ~ 8FH: Ç ÄÅ

90H ~ 9FH: É Æ ÖÜ £Ø

A0H ~ AFH: Ñ ¿

E0H ~ E1H: ß

Font 7

20H ~ 3FH: !"#$%&'()*+,-./0123456789:;<=>?

40H ~ 5FH: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_

60H ~ 7FH: `abcdefghijklmnopqrstuvwxyz{|}~

Font 8

20H ~ 3FH: + 0123456789 < >

40H ~ 5FH: C E N ST X Z

60H ~ 7FH: C E N ST X Z |

Font 9

Font 9 (ASD smooth font set) includes 8 symbol sets, USASCII, UK, German, French, Italian, Spanish, Swedish, and Danish/Norwegian.

The sizes are 4, 6, 8, 10, 12, 14 and 18 points. The 4-point font is for the model FM4603 only.

4 points

20H ~ 3FH: !"#$%&'()*+,-./0123456789:;< = > ?
40H ~ 5FH: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60H ~ 7FH: 'abcdefghijklmnopqrstuvwxyz{|}~
A0H ~ BFH: áíóúñÑªº¿® ½¼¡ ÁÂÀ© ¢¥
C0H ~ DFH: ãÃ ðÐÊËÈıÍÎÏ Ì
E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ ± ¾ ÷ ¸°¨·

6 points

20H ~ 3FH: !"#$%&'()*+,-./0123456789:;< = > ?
40H ~ 5FH: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60H ~ 7FH: 'abcdefghijklmnopqrstuvwxyz{|}~
A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥
C0H ~ DFH: ãÃðÐÊËÈıÍÎÏÌ
E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

8 points

20H ~ 3FH: !"#$%&'()*+,-./0123456789:;< = > ?
40H ~ 5FH: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60H ~ 7FH: 'abcdefghijklmnopqrstuvwxyz{|}~
A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥
C0H ~ DFH: ãÃðÐÊËÈıÍÎÏÌ
E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

10 points

20H ~ 3FH: !"#$%&'()*+,-./0123456789:;< = > ?
40H ~ 5FH: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60H ~ 7FH: 'abcdefghijklmnopqrstuvwxyz{|}~
A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥
C0H ~ DFH: ãÃðÐÊËÈıÍÎÏÌ
E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

12 points

20H ~ 3FH: !"#$%&'()* + ,-./0123456789:;< = > ?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 7FH: 'abcdefghijklmnopqrstuvwxyz{| }~

A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥

C0H ~ DFH: ãÃðÐÊËÈıÍÎÏÌ

E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

14 points

21H ~ 3FH: !"#$%&'()* + ,-./0123456789:;< = > ?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 7FH: 'abcdefghijklmnopqrstuvwxyz{| }~

A0H ~ BFH: áíóúñÑªº¿®½¼¡ÁÂÀ©¢¥

C0H ~ DFH: ãÃðÐÊËÈıÍÎÏÌ

E0H ~ FFH: ÓßÔÒõÕµþÞÚÛÙýÝ± ¾÷ ¸°¨·

18 points

20H ~ 2FH: !"#$%&'()* + ,-./

30H ~ 3FH: 0123456789:;< = > ?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 6FH: 'abcdefghijklmno

70H ~ 7FH: pqrstuvwxyz{| }~

A0H ~ AFH: áíóúñÑªº¿®½¼¡

B0H ~ BFH: ÁÂÀ©¢¥

C0H ~ CFH: ãÃ

D0H ~ DFH: ðÐÊËÈıÍÎÏÌ

E0H ~ EFH: ÓßÔÒõÕµþÞÚÛÙýÝ

F0H ~ FFH: ± ¾÷ ¸°¨·

Courier Font Set

The Courier font set is for the model FM4602 only. It includes Roman-8, PC, PC-A, PC-B, EAMA-94, Legal, Greek and Russian symbol sets.

Roman-8

20H ~ 2FH: !"#$%&'()*+,-./

30H ~ 3FH: 0123456789:;<=>?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 6FH: `abcdefghijklmno

70H ~ 7FH: pqrstuvwxyz{|}~▒

A0H ~ AFH: _ÀÂÈÊËÎÏ´`ˆ¨˜ÙÛ£

B0H ~ BFH: ¯Ýý°ÇçÑñ¡¿¤£¥§ƒ¢

C0H ~ CFH: âêôûáéóúàèòùäëöü

D0H ~ DFH: ÅîØÆåíøæÄìÖÜÉïßÔ

E0H ~ EFH: ÁÃãĐðÍÌÓÒÕõŠšÚŸÿ

F0H ~ FFH: Þþ·µ¶¾—¼½ªº«■»±

ECMA-94

20H ~ 2FH: !"#$%&'()*+,-./

30H ~ 3FH: 0123456789:;<=>?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 6FH: `abcdefghijklmno

70H ~ 7FH: pqrstuvwxyz{|}~▒

A0H ~ AFH: ¡¢£¤¥¦§¨©ª«¬-®¯

B0H ~ BFH: °±²³´µ¶·¸¹º»¼½¾¿

C0H ~ CFH: ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏ

D0H ~ DFH: ÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞß

E0H ~ EFH: àáâãäåæçèéêëìíîï

F0H ~ FFH: ðñòóôõö÷øùúûüýþÿ

PC

20H ~ 2FH: !"#$%&'()*+,-./

30H ~ 3FH: 0123456789:;<=>?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 6FH: `abcdefghijklmno

70H ~ 7FH: pqrstuvwxyz{|}~⌂

80H ~ 8FH: ÇüéâäàåçêëèïîìÄÅ

90H ~ 9FH: ÉæÆôöòûùÿÖÜ¢£¥₧ƒ

A0H ~ AFH: áíóúñÑªº¿⌐¬½¼¡«»

B0H ~ BFH: ░▒▓│┤╡╢╖╕╣║╗╝╜╛┐

0C0H ~ CFH: └┴┬├─┼╞╟╚╔╩╦╠═╬╧

D0H ~ DFH: ╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀

E0H ~ EFH: αßΓπΣσµτΦΘΩδ∞φε∩

F0H ~ FFH: ≡±≥≤⌠⌡÷≈°∙·√ ^{n} ^{2} ■

PC-A

20H ~ 2FH: !"#$%&'()*+,-./

30H ~ 3FH: 0123456789:;<=>?

40H ~ 4FH: @ABCDEFGHIJKLMNO

50H ~ 5FH: PQRSTUVWXYZ[\]^_

60H ~ 6FH: `abcdefghijklmno

70H ~ 7FH: pqrstuvwxyz{|}~⌂

80H ~ 8FH: ÇüéâäàåçêëèïîìÄÅ

90H ~ 9FH: ÉæÆôöòûùÿÖÜø£ØĿŀ

A0H ~ AFH: áíóúñÑõÕ¿ãÃℓŉ¡ ^{3} ¤

B0H ~ BFH: ░▒▓│┤╡╢╖╕╣║╗╝╜╛┐

C0H ~ CFH: └┴┬├─┼╞╟╚╔╩╦╠═╬╧

D0H ~ DFH: ╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀

E0H ~ EFH: αßΓπΣσµτΦΘΩδ∞φε∩

F0H ~ FFH: ≡±≥≤⌠⌡÷≈°∙·√ ^{n} ^{2} ■

PC-B

20H ~ 2FH: ! " # $ % & ' ( ) * + , - . /
30H ~ 3FH: 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
40H ~ 4FH: @ A B C D E F G H I J K L M N O
50H ~ 5FH: P Q R S T U V W X Y Z [\ ] ^ _
60H ~ 6FH: ` a b c d e f g h i j k l m n o
70H ~ 7FH: p q r s t u v w x y z { | } ~ ⌂
80H ~ 8FH: Ç ü é â ä à å ç ê ë è ï î ì Ä Å
90H ~ 9FH: É æ Æ ô ö ò û ù ÿ Ö Ü ø £ Ø × ƒ
A0H ~ AFH: á í ó ú ñ Ñ ª º ¿ ® ¬ ½ ¼ ¡ « »
B0H ~ BFH: ░ ▒ ▓ │ ┤ Á Â À © ╣ ║ ╗ ╝ ¢ ¥ ┐
C0H ~ CFH: └ ┴ ┬ ├ ─ ┼ ã Ã ╚ ╔ ╩ ╦ ╠ ═ ╬ ¤
D0H ~ DFH: ð Ð Ê Ë È ı Í Î Ï ┘ ┌ █ ▄ ¦ Ì ▀
E0H ~ EFH: Ó ß Ô Ò õ Õ µ þ Þ Ú Û Ù ý Ý ¯ ´
F0H ~ FFH: - ± ‗ ¾ ¶ § ÷ ¸ ° ¨ · ¹ ³ ² ■

Legal

20H ~ 2FH: ! ″ # $ % & ′ ( ) * + , - . /
30H ~ 3FH: 0 1 2 3 4 5 6 7 8 9 : ; ‗ = ¢ ?
40H ~ 4FH: @ A B C D E F G H I J K L M N O
50H ~ 5FH: P Q R S T U V W X Y Z [®] © _
60H ~ 6FH: ° a b c d e f g h i j k l m n o
70H ~ 7FH: p q r s t u v w x y z § ¶ † ™ ▒

Greek

20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~⌂
80H ~ 8FH: ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠ
90H ~ 9FH: ΡΣΤΥΦΧΨΩαβγδεζηθ
A0H ~ AFH: ικλμνξοπρσςτυφχψ
B0H ~ BFH: ░▒▓│┤╡╢╖╕╣║╗╝╜╛┐
C0H ~ CFH: └┴┬├─┼╞╟╚╔╩╦╠═╬╧
D0H ~ DFH: ╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀
E0H ~ EFH: ωάέήϊίόύϋώΆΈΉΊΌΎ
F0H ~ FFH: Ώ±≥≤⌠⌡÷≈°£¥√ ^{n} ^{2} ■

Russian

20H ~ 2FH: !"#$%&'()*+,-./
30H ~ 3FH: 0123456789:;<=>?
40H ~ 4FH: @ABCDEFGHIJKLMNO
50H ~ 5FH: PQRSTUVWXYZ[\]^_
60H ~ 6FH: `abcdefghijklmno
70H ~ 7FH: pqrstuvwxyz{|}~⌂
80H ~ 8FH: АБВГДЕЖЗИЙКЛМНОП
90H ~ 9FH: РСТУФХЦЧШЩЪЫЬЭЮЯ
A0H ~ AFH: абвгдежзийклмноп
B0H ~ BFH: ░▒▓│┤╡╢╖╕╣║╗╝╜╛┐
C0H ~ CFH: └┴┬├─┼╞╟╚╔╩╦╠═╬╧
D0H ~ DFH: ╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀
E0H ~ EFH: рстуфхцчшщъыьэюя
F0H ~ FFH: Ёё≥≤⌠⌡÷≈°∙·√ ^{n} ^{2} ■

Internal Bar Codes

This PPLA supports 20 one-dimensional bar codes and 2 two dimensional bar codes.

BAR CODE A : 3 OF 9

19450228

BAR CODE B : UPC-A

0 22812 34567 4

BAR CODE C : UPC-E

0 654321 7

BAR CODE D :
INTERLEAVED 2 OF 5

135792468

BAR CODE E :
CODE 128

TO JIMMY

BAR CODE F : EAN-13

1 357924 682287

BAR CODE G : EAN-8

0228 0011

BAR CODE H : HBIC

HEALTHM

CODA BAR
BAR CODE I

ABCD0123456789

BAR CODE J : I25
WITH CHECKSUM

199707018

BAR CODE K :
PLESSEY

503819781

BAR CODE L : I25
WITH CHECKSUM &
BEARER

1 99 70701 87391 4

38

BAR CODE M : UPC2

02280

BAR CODE N : UPC5

BAR CODE P :
POSTNET

BAR CODE O :
CODE 93

CODE 93 OK

(78) 1 2989089 990899998 1

BAR CODE Q
: UCC/EAN
128

70 701194 502 2800

BAR CODE R
: UCC/EAN
128 K

BAR CODE T :
TELEPEN

ABC! -=.

BAR CODE V :
FIM

BAR CODE U :
MAXICODE

BAR CODE Z :
PDF-417

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Appendix F: FONTS AND BAR CODES FOR PPLB

Internal Fonts

There are 5 internal fonts for the PPLB emulation.

Each has 6 eight-bit and 9 seven-bit symbol sets. Font 5 does not contain any lower-case characters.

8 bit symbol sets	Code page 437, 850, 852, 860, 863 and 865
7 bit symbol sets	USA, British, German, French, Danish, Italian, Spanish, Swedish and Swiss

Font 1

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 2

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 3

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 4

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

Font 5

ABCDEFGHIJKLM
NOPQRSTUVWXYZ

Symbol Set

```
Code Page 437
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£  ƒ
A0-BF: áíóúñÑªº¿  ½¼¡
E0-FF:  ß    μ                 °
```

```
Code Page 850
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø ƒ
A0-BF: áíóúñÑªº¿  ½¼¡       ÁÂÀ     ¢
C0-DF:       ãÃ          ÊËÈ ÍÎÏ     Ì
E0-FF: ÓßÔÒõÕμ  Ú Ù      =¾¶§  °
```

```
Code Page 852
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: Çüéâä  ç ë  î Ä É  ôö    ÖÜ
A0-BF: áíóú                 ÁÂ
C0-DF:                    Ë  ÍÎ
E0-FF: ÓßÔ      Ú           §  °
```

```
Code Page 860
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâãàÁçêÊèÌÔìÃÂÉÀÈôõòÚùÌÕÜ¢£Ù Ó
A0-BF: áíóúñÑªº¿Ò ½¼
E0-FF:  ß    μ                 °
```

```
Code Page 863
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâÂà¶çêëèïî=À§ÉÈÊôËÏûú ÔÜ¢£Ù ƒ
A0-BF:   óú    Î  ½¼¾
E0-FF:  ß    μ                 °
```

```
Code Page 865
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
80-9F: ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø ƒ
A0-BF: áíóúñÑªº¿  ½¼
E0-FF:  ß     µ                    °
```

```
USASCII
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
```

```
UK
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
60-7F: `abcdefghijklmnopqrstuvwxyz
```

```
German
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: §ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜ^_
60-7F: `abcdefghijklmnopqrstuvwxyzäöüß
```

```
French
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: àABCDEFGHIJKLMNOPQRSTUVWXYZ°ç§^_
60-7F: `abcdefghijklmnopqrstuvwxyzéùè"
```

```
Danish
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: @ABCDEFGHIJKLMNOPQRSTUVWXYZÆØÅÜ_
60-7F: `abcdefghijklmnopqrstuvwxyzæøåü
```

```
Italian
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: §ABCDEFGHIJKLMNOPQRSTUVWXYZ°çé^_
60-7F: ùabcdefghijklmnopqrstuvwxyzàòèì
```

```
Spanish
20-3F:  !"!$%&'()*+,-./0123456789:;<=>?
40-5F: ¡ABCDEFGHIJKLMNOPQRSTUVWXYZÑñ¿ü_
60-7F: áabcdefghijklmnopqrstuvwxyzéíóú‾
```

```
Swedish
20-3F:  !"#$%&'()*+,-./0123456789:;<=>?
40-5F: ÉABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÅÜ_
60-7F: éabcdefghijklmnopqrstuvwxyzäöåü‾
```

```
Swiss
20-3F:  !"£$%&'()*+,-./0123456789:;<=>?
40-5F: §ABCDEFGHIJKLMNOPQRSTUVWXYZàçè^_
60-7F: `abcdefghijklmnopqrstuvwxyzäöüé‾
```

Internal Bar Codes

The PPLB supports 26 one-dimensional bar codes and 2 two dimensional bar codes.

** Code 39 **

C39

** Code 93 **

** Code 128UCC shipping container **

(A2) 3 4567890 123456788 3

** Code 128 **

0123456789

** Codabar **

ABCD

** EAN-8 **

0123 4596

** EAN-8 2 add-on **

89

1234 5670

** EAN-8 5 add-on **

93891

9839 8126

** EAN-13 **

0 123456 789012

** EAN-13 2 add-on **

98

7 676798 787909

** EAN-13 5 add-on **

29838

7 219192 929294

** German postcode **

01234.567.891.23 1

** UCC/EAN **

(12)3456789

** UPC-A **

1 35790 24680 9

** UPC-A 2 add-on **

59

6 76908 93489 3

** UPC-A 5 add-on **

83754

5 98676 12761 4

** UPC-E **

0 438959 0

** UPC-E 2 add-on **

32

0 432328 0

** UPC-E 5 add-on **

09274

0 438959 0

** UPC I25 **

1 23 45678 90122 4

** Maxi Code **

** PDF-417 **

Appendix F: STAND-ALONE OPERATION FOR KEYBOARD AND BARCODE READER

Apart from related hardware devices and PPLB emulation, in order to use keyboards and barcode readers (scanner) you should follow the procedure as described below (FM4602 and FM4603).

Note: The Fastmark family ships with PPLA emulation installed. To use the external keyboard of to attach an external scanner, PPLB must be installed. Contact your AMT Datasouth representative for instructions on how to load this emulation.

Keyboard

1. Turn off the printer.
2. Make a form/program that will be used with the keyboard.
3. Connect the keyboard to the keyboard I/F.
4. Turn on the printer.
5. Download it to the printer and save the form to the flash memory.
6. Type the input data according to the instructions shown at the first row.

Pay attention to some major control functions

Key	Function
Esc	Enter or exit from keyboard mode
Backspace	Delete the last typed character.
F1	Next form if more than one forms exist.
Enter	- Select the form. - End of typed data.

Example:

1. Make a command file for a form, KBD.FRM.

Command	Description
ZS	Enable the store to flash
FK"KBDFORM"	Delete the previous one
FS"KBDFORM"	Start of form
V00,15,N,"Product Name ?"	Variable and display message
C0,10,N,+1,"Product No. ?"	Counter and display message
Q50,24	Label dimension
q816	Label width
S2	Speed
D8	Darkness
ZT	Print from top
A550,20,0,4,1,1,R,"ABC COMPANY"	Fixed data
B550,60,0,2,2,4,40,B,C0	Barcode I25 for counter
A540,150,0,3,1,1,N,V00	Print the input product
FE	End of form
ZN	Disable the store to flash

2. Send the file, KBD.FRM to printer under MS-DOS

   >COPY/B KBD.FRM LPT1:

3. Turn off the printer, connect the keyboard and then turn on the printer.

   The message will be displayed on the LCD.

READY (203,PPLB)
<ESC> FOR KEYBD

4. Press <ESC> to enter the keyboard mode, the form name will be shown for the selection, press <ENTER> key to select the form.

KBDFORM
¿

5. Key-in product name and number.

Product Name ?
Barcode Printer ¿

Product No. ?
0123456789 ¿

6. Input the label count and copy count.

LABEL SET NO. ?
2 ¿

COPIES PER LAB ?
3 ¿

7. Press <ENTER> to continue for next label and repeat steps 5 to 7, or <ESC> to exit.

ENTER to go on,
Or ESC to return

Output


ABC COMPANY
0123456789
Barcode Print
ABC COMPANY
0123456789
Barcode Print
ABC COMPANY
0123456789
Barcode Print

Barcode Reader

1. Turn off the printer.
2. Make a form for barcode reader; the form name must be "**READER**".
3. Turn on the printer
4. Download it to the printer and save the form to the flash memory permanently.
5. Turn off the printer
6. Connect the barcode reader to the keyboard I/F.
7. Set bits 6, 7 and 8 of DIP switch to ON positions.
8. Turn on the printer.
9. Scan the barcode data according to the instructions shown at the first row.

Example:

1. Make a command file for a form, READER.FRM.

Command	Description
ZS	Enable the store to flash
FK"**READER**"	Delete the previous one
FS"**READER**"	Start of form
V00,15,N,"Product Name ?"	Variable and display message
C0,10,N,+1,"Product No. ?"	Counter and display message
Q50,24	Label dimension
q816	Label width
S2	Speed
D8	Darkness
ZT	Print from top
A550,20,0,4,1,1,R,"ABC COMPANY"	Fixed data
B550,60,0,2,2,4,40,B,C0	Barcode I25 for counter
A540,150,0,3,1,1,N,V00	Print the input product
PA1	Single copy
FE	End of form
ZN	Disable the store to flash

2. Send the file, READER.FRM to printer under MS-DOS

   >COPY/B READER.FRM LPT1:

3. Turn off the printer.

4. Connect the barcode reader to the serial port.

5. Set switches 6, 7 and 8 on the back of the printer to the ON positions.

6. Turn on the printer.

7. The preprogrammed form, READER will start automatically executing.

   Scan the product name and number from the printed bar codes by the barcode reader.

Product Name ?
APPLE¿

Product No. ?
11223344¿

8. A label will be printed. The copy count depends on the PA command for the READER form. The printer will then return to the Ready for input display screen.

Output



Notes:

1. Set switches 6,7 and 8 to OFF positions and restart the printer to return to normal printer functionality.
2. The bar code reader and keyboard cannot be connected to the PS/2 keyboard I/F simultaneously.
3. When using a keyboard or a barcode reader, the communication with host is only through the Centronics parallel port (Keyboard or Barcode reader port and the serial port is the same. Only one can be used at a time.).
4. When using a Keyboard program the P command is not allowed.
5. When using the bar code reader/scanner form, a PA command must by included.

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AMT Datasouth Corp.

Corporate Headquarters
4765 Calle Quetzal
Camarillo, CA 93012
(805) 388-5799 PH
(805) 484-5282 FX

Charlotte Operation
4216 Stuart Andrew Blvd.
Charlotte, NC 28217
(704) 523-8500 PH
(704) 525 6104 FX

AMT Datasouth International
Unit B, Pinnacle 15
Gowerton Rd, Brackmills
Northampton, NN4 7BW
England
+44 1604 763394 PH
+44 1604 760661 FX

www.amtdatasouth.com